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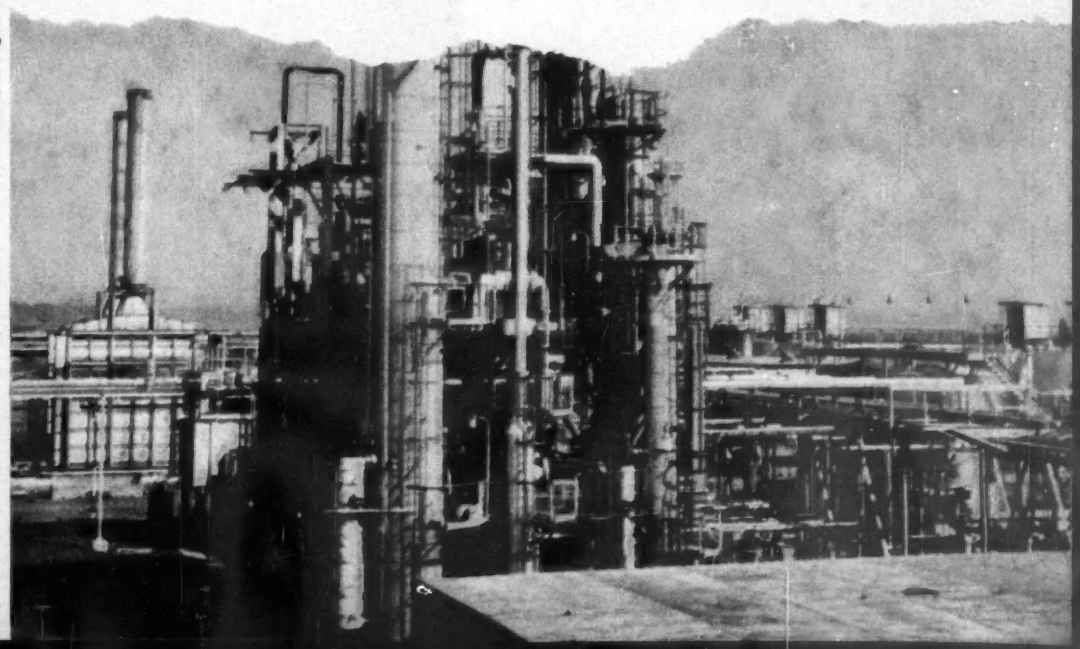
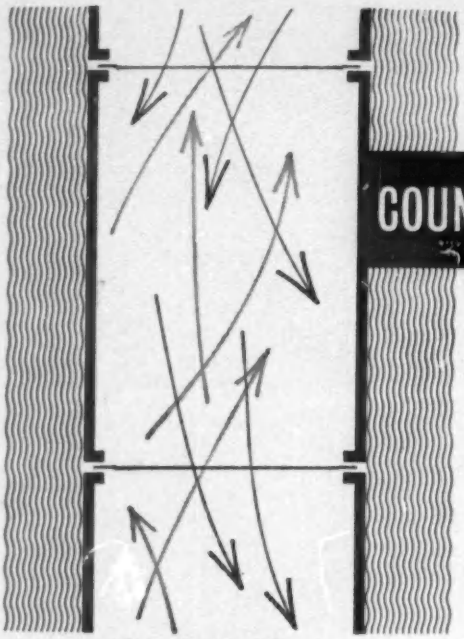


Ethylene Dichloride plant for British Hydrocarbon Chemicals Limited, Grangemouth



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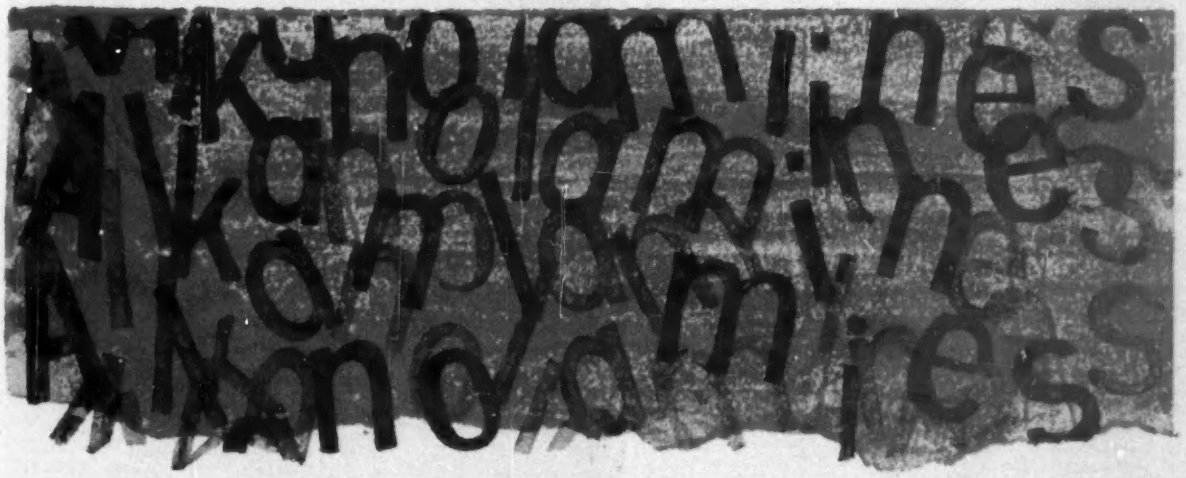

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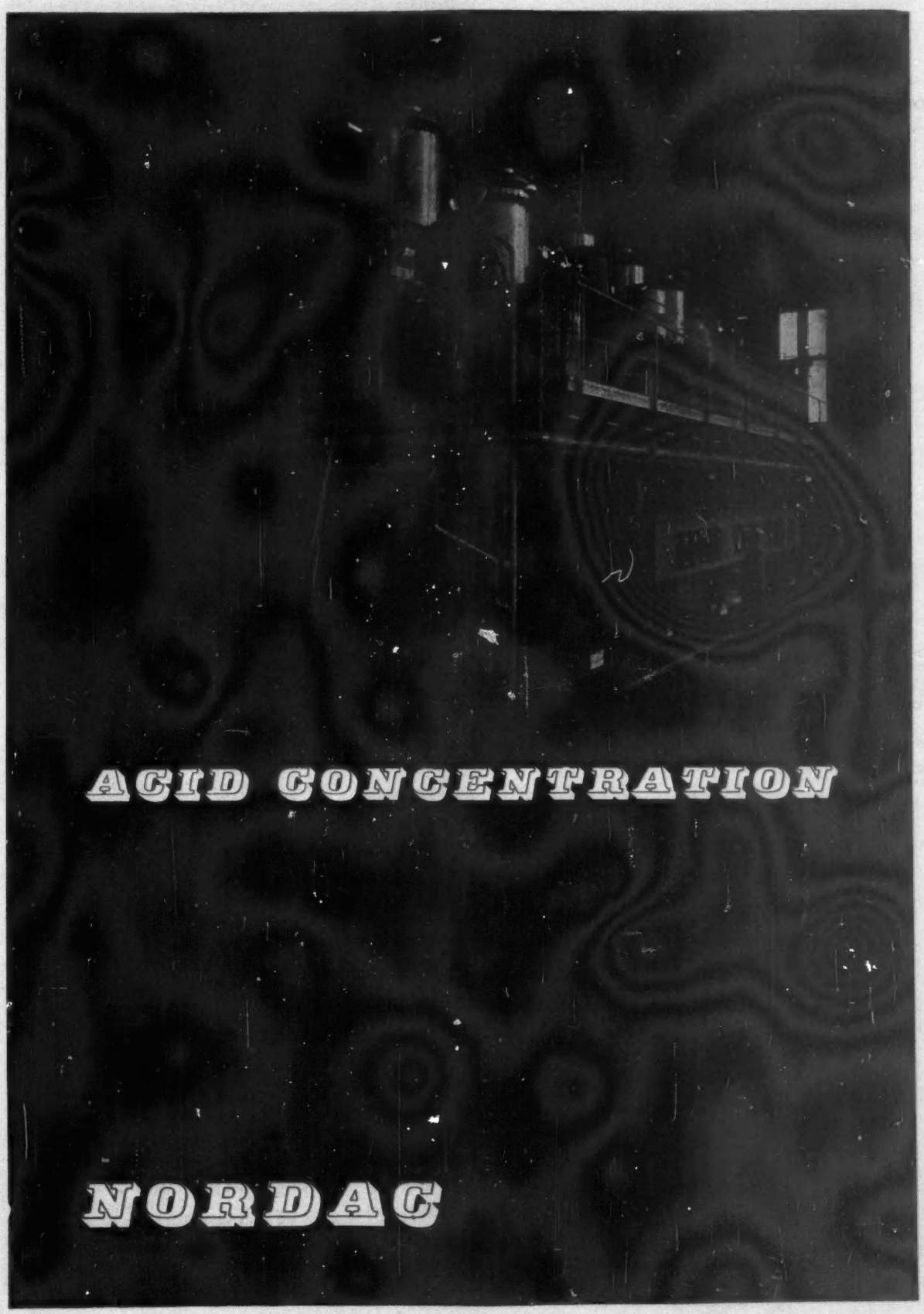
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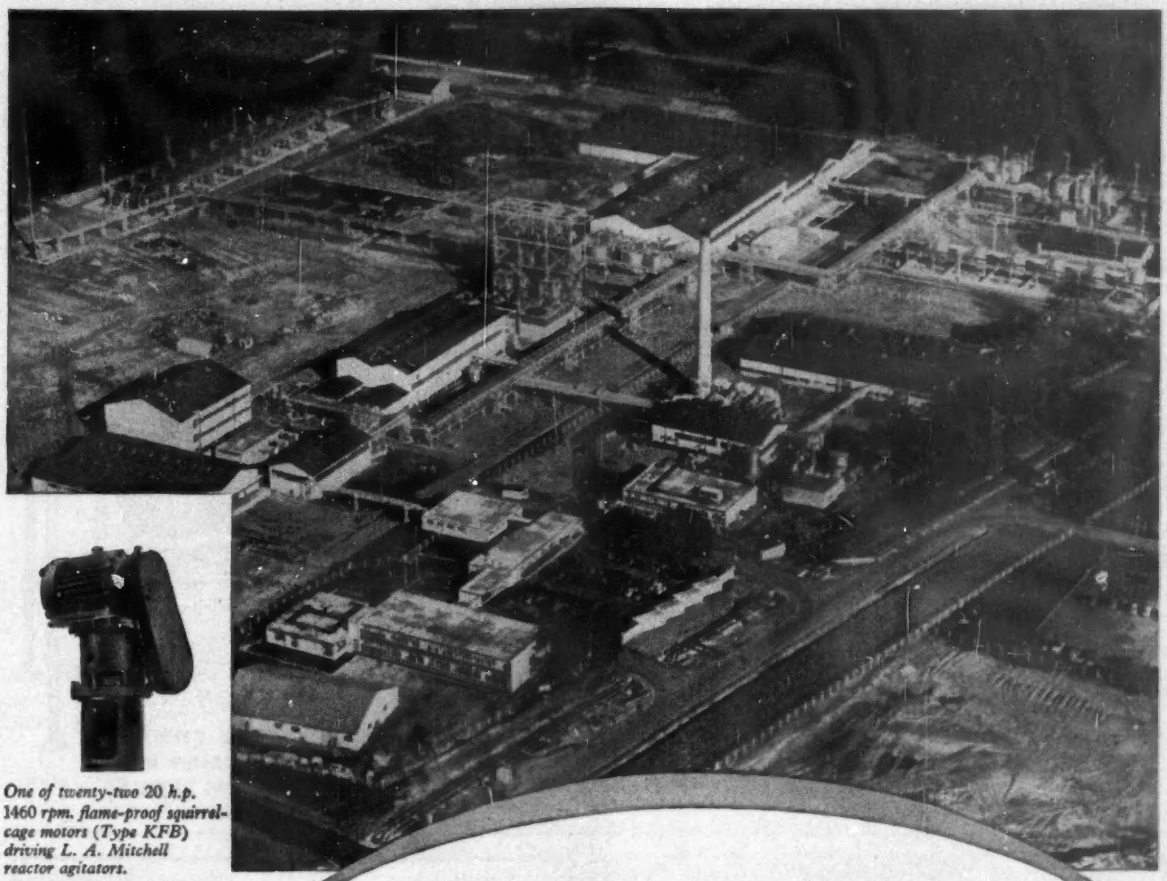

One of twenty-two 20 h.p. 1460 rpm. flame-proof squirrel-cage motors (Type KFB) driving L. A. Mitchell reactor agitators.

Over 850 AEI Motors

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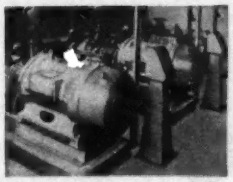
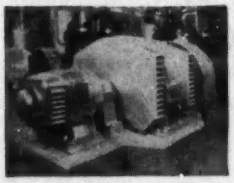


Two of four 100 h.p. 2920 r.p.m. squirrel-cage motors (Type HRSP), with pedestal control stations, driving water pumps.



Two of four 425 h.p. 300 rpm. salient pole synchronous motors (Type SM) with overhung exciter driving Laurence Sterne refrigeration compressors.

The plant of the International Synthetic Rubber Company Ltd at Hythe is capable of producing 90,000 tons of synthetic rubber a year using butadiene and styrene as the main raw materials. Three grades of rubber are produced suitable for making motor vehicle tyres, coloured rubber products and general products. The motors, ranging from 0.25 to 620 h.p. and used for driving pumps and compressors, were all supplied by AEI. In addition, AEI made and erected the switchgear, transformers and other substation equipment for this plant.

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Motor and Control Gear Division

RUGBY AND MANCHESTER ENGLAND

A5580

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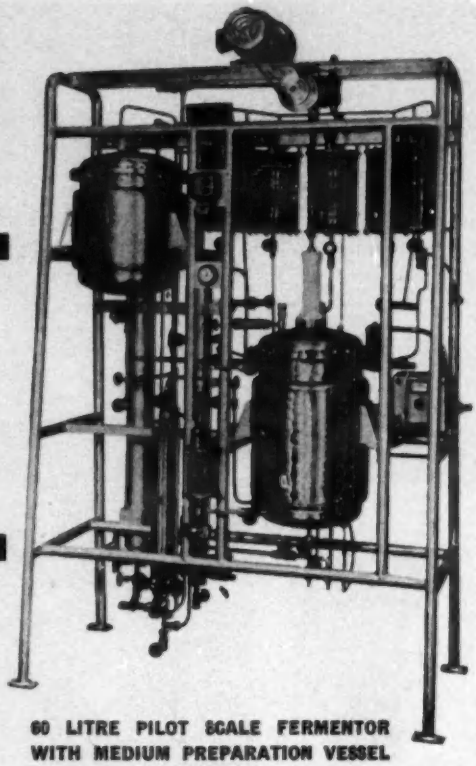

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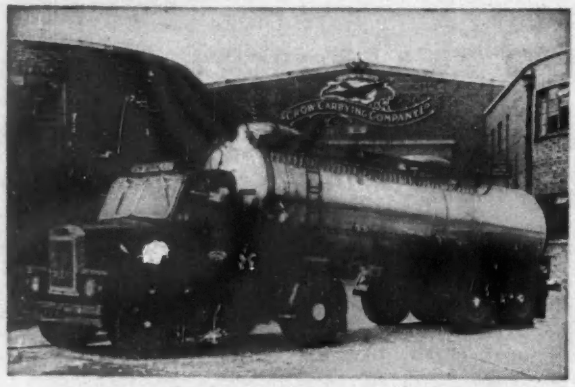

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VOL. 86 No. 2216
DECEMBER 30 1961

Telephone: FLEet Street 3212 (26 lines)
Telegrams: Benformula - London E.C.4

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Annual subscription is: home, 57s 6d, overseas, 65s, single copies 1s 9d (by post 2s)

Chemical Age
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1963—VINTAGE YEAR?

EARLY returns to the annual CHEMICAL AGE survey of sales trends indicate that many companies expect an improvement in conditions in 1962, but that for most this will be a year of consolidation.

The survey carried out by this journal of the chemical plant projects in September, clearly indicates that 1963 will see much more activity than 1962, with many major plants coming into production or nearing completion.

Some major projects are due for completion in 1962. British Hydrocarbon Chemicals are expecting to complete their ethylene plant, the ethylene dichloride plant using the Ethyl licence and the butadiene plant licensed by Shell—all at Baglan Bay. In the synthetic fibre field, Chemstrand will complete the second extention to their Acrilan plant bringing the capacity up to 25 million lb. a year and Courtaulds will have a 32 million lb. capacity of Courtelle early in 1962. Among I.C.I.'s activities, the £500,000 nitrogen plant at Wilton, the £200,000 modernisation of the Perspex plant at Darwen and the 3,000 ton a year extension to the Perspex acrylic sheet plant, raising the capacity to 20,000 tons at Wilton, are all due on stream in 1962.

In spite of 1962's impressive array of plants, which are mainly towards a consolidation of existing programmes, 1963 will be a year of greater activity with several £multi million developments and modernisation programmes due for completion.

British Petroleum Co. will be on stream with their £8 million oil refinery at Belfast Lough, which will have a throughput of 1.3 million tons of crude oil a year. Clayton Aniline are also involved in a major modernisation and development scheme at their Manchester factory, which will be nearing completion by the end of 1963 at a cost of £6 million. Another moderisation programme, also costing £6 million, is that of I.C.I.'s Billingham Division, which includes a plant for hydrogen synthesis using oil. Others of I.C.I.'s divisions are also engaged in major expansion programmes. The Heavy Organic Chemicals Division will have their £multi million, million tons per annum development on stream in 1963, and the methylamine plant, with a capacity more than five times that of the existing plant, will be ready. British Titan products have major developments and extensions of titanium oxide plant and services due on stream in the same year, and, representing the companies with foreign interests, Du Pont Co. (United Kingdom) Ltd. will bring a £multi million T.D.I. and phosgene plant on stream at Maydown, N. Ireland.

The synthetics fibre field will see considerable activity in 1963. I.C.I.'s large-scale caprolactam plant, using the Inventa process, is due on stream and their nylon-66 expansion, which will give a 25-30% increase in capacity on the existing 23,000 tons a year will be in production at the beginning of the year. The first stage of British Enkalon's nylon-6 project in N. Ireland is due for completion in 1963; costing £7.3 million, it will have a capacity of 4½ million lb. a year. On the spinning side, Fibres Division Terylene spinning plant will be complete in 1963.

Perhaps one of the most exciting fields of development in U.K. chemicals

(Continued on page 1018)

INDEPENDENT CHAIRMAN TO MEDIATE IN WAGES CLAIM

AN independent mediator is to be brought in to help chemical employers and unions settle the impasse on wage negotiations in the heavy chemicals sector. A "suitable person" will be asked to preside at the next meeting of the Chemical and Allied Industries Joint Industrial Council to be held on Thursday, 25 January.

This was decided at a meeting held in London on 20 December, which followed earlier rejection of a claim for a wages increase for 60,000 workers in heavy chemicals, fertilisers and plastics materials. The latest meeting did not resolve the differences and it was agreed to invite an independent chairman from outside the chemical industry to act as chairman at the next meeting.

The wage claim was rejected on the grounds that the industry could not afford it at present, an argument that was repeated at last week's meeting.

I.C.I., whose wage negotiations are handled separately by the company, have also rejected claims for an increase and a further meeting is to be held between the company and the unions in the New Year—probably before that of the Joint Industrial Council. A wages claim for workers in the pharmaceutical and fine chemical sector is also to be made in the New Year.

B.O.C. advance pay rise date

British Oxygen Co. have reached agreement with the unions on a 3d an hour increase in wages for 4,000 workers. The union originally rejected the offer when it was made two weeks ago, but agreed to the wage increase when B.O.C. advanced the date from which it would be paid to 18 December.

New appointment for Sir Miles Thomas

SIR MILES THOMAS, while continuing his appointment as chairman of Monsanto Chemicals Ltd., is to relinquish the duties of chief executive in March on becoming chairman of Agricultural Central Trading Ltd., a commercial organisation set up by British farmers to buy in bulk and to handle sales of farm produce.

Sir Miles Thomas

It is presumed that duties of Monsanto's chief executive will be taken over by Mr. John C. Garrels, a 47-years-old American, who became managing director of U.K. Monsanto three months ago.

D.C.L. cut price of acetic acid

A 2d. per proof gallon cut in the price of ethanol, effective 1 January by the Distillers Chemical Division, has led to price cuts, from the same date for other products. Ethyl acetate and isopropyl acetate are cut by £7/ton; acetic acid by £5/ton and acetic anhydride by £10/ton.

Distillers new one-step plant to produce acetic acid directly from petroleum hydrocarbon feedstock, is due on stream within the next two or three months at Hull. Costing £2 million, this plant has Lummus as main contractors. Plans to extend the plant are already under consideration.

U.K. frees imports of Japanese calcium carbide

Calcium carbide imports from Japan have been completely liberalised under a newly-signed Anglo-Japanese trade agreement. Increased quotas are worth about £3 million; a new quota of £150,000 has been established for semiconductors. By October 1962, Japan will have freed 90% of all imports from quota restrictions.

Vintage year

(*Continued from page 1017*)

in 1963 will be that of synthetic rubbers. U.K.'s first home-produced butyl rubbers will be available from Esso's 30,000 ton a year Fawley plant. This plant will more than satisfy anticipated home demands. A plant for the production of polydiene rubbers with a capacity "as large as any polydiene plant in the world" being built by Shell Chemical at Carrington, is due on stream early in 1963.

In Parliament

Nuclear reactor for Scottish universities

A GRANT of £450,000 is being offered to Scottish universities for a low-energy nuclear reactor, stated Mr. Denzil Freeth, Parliamentary Secretary, Ministry for Science, in the Commons on 20 December. The reactor, which will be built on the site of the National Engineering Laboratory at East Kilbride, near Glasgow, will be shared by the universities of Aberdeen, Edinburgh, Glasgow and St. Andrews and by the Royal College of Science and Technology, Glasgow, who will be responsible for operation and maintenance.

Main part of the scientific programme will be the production of short-lived radioisotopes for research in chemistry, metallurgy, biology and medicine. The reactor will also provide teaching and training facilities for engineers and physicists in reactor technology.

Toxic seed dressings

The Parliamentary Secretary to the Ministry of Agriculture, Mr. W. M. F. Vane, stated in a written Parliamentary answer that it had been agreed with the manufacturers and other interests concerned that from 1 January seed dressings containing dieldrin, aldrin and heptachlor would not be used on spring-sown grain, and that they might be used on autumn- and winter-sown wheat only if there was a real danger of attack from wheat bulb fly. Until further notice and subject to Government recommendation for safe use, those chemicals might continue to be used in other ways, such as in dressings applied to other kinds of seeds, in sprays or dusts or incorporated with fertilisers, for the control of wireworm and other soil pests.

An official notice has been issued by the Ministry of Agriculture, Fisheries and Food, pointing out that cereal seed treated with dressings containing aldrin, dieldrin or heptachlor can be dangerous to wild life, and recommending that these seed dressings should not be used on spring-sown cereals or at any other time except on winter-sown wheat (up to the end of December) and then only where there is a danger of attack from wheat bulb fly. Treated seed should not be fed to animals, poultry, or wild birds or left where they can get at it.

These recommendations, which come into effect on 1 January 1962 are intended to be read in conjunction with existing recommendations about aldrin and dieldrin.

Big rise in Czech quotas for U.K. chemicals

UNDER a new agreement, trade in 1962 between Czechoslovakia and the U.K. is to be increased. The quota list allows for Czech purchases of British goods to the value of about £7 million, 24% up on 1961. These will include chemical plant, chemicals and plastics.

The Czech quota includes the purchase from the U.K. of chemical and rubber plant to a value of £2 million (£1,515,000); chemicals, £987,000 (£650,000); and dyestuffs, etc. £230,000 £125,000).

The lists also provide for the issue of U.K. import licences for Czechoslovak goods to a total of about £9.4 million, a rise of 17% over 1961.

Project News

Laporte's Australian TiO_2 plant will be ahead of schedule

THE £3½ million titanium oxide plant to be built at Bunbury, Western Australia, by **Laporte Industries Ltd.**, is now expected to be completed in October 1963—more than a year ahead of schedule—according to a recent statement in Perth by Mr. W. Woodhall, managing director of Laporte Titanium Ltd., and a director of Laporte Titanium (Australia) Pty. Ltd., the new company which will operate the plant (C.A., 13 May, p. 763).

It is expected that the plant will be handed over for mechanical commissioning in September 1963 and will be ready for production the following month. Laporte hope to be delivering products from the plant in the Eastern States by December 1963.

As reported in C.A., 7 October, p. 548, the Bechtel Organisation have been awarded the overall contract for engineering and construction of the plant.

U.K. aid for Indian barium chemicals project

● THE first barium chemicals plant in India will be set up near Tirupati with British collaboration in the private sector. The necessary licence has been granted by the Government of India. The plant is expected to go into production late in 1962 to produce about 6,000 tons of barium salts. India's present imports of barium chemicals totals about Rs 8 million.

Dounreay reactor completes high power run

● THE **U.K. Atomic Energy Authority's** fast breeder reactor at Dounreay has just completed a run at high power, reaching a maximum of 11 megawatts of heat. It has now been closed down for inspection. When the reactor is running at full power, it is expected to produce 60 megawatts of heat. The system has proved stable over the range of power generated, which has coincided with the calculated predictions. No information is yet available on the possibility of breeding nuclear fuel.

A.P.V. co-operate in new brewing technique

● THE first continuous mashing plant which so far as is known has ever operated successfully on a commercial scale for as long as six months has been under development at the Park Royal brewery of **Arthur Guinness Son and Co. Ltd.** This work has been undertaken in collaboration with the **A.P.V. Co. Ltd.**, the Brewing Industry Research Foundation and Courage Barclay and Simonds Ltd. The six months of continuous running are reported to have been "very satisfactory."

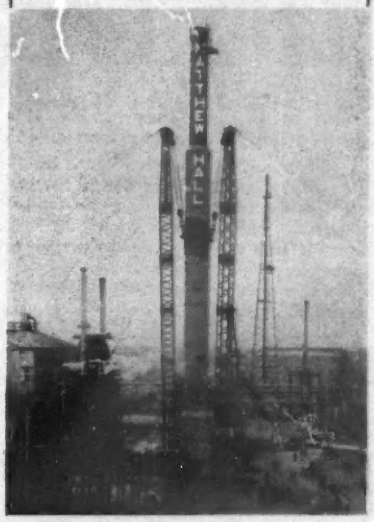
This represents a great advance in the process of continuous brewing says Lord Iveagh, chairman of Guinness. Production models of this pioneer plant have been purchased by other brewers.

A new pilot brewing line, now being commissioned, includes a mashing unit of new and simplified design and a new continuous boiling and hopping device. Both these items of plant have been developed at Park Royal. This new versatile brewing line is adaptable to the brewing of all types of beer.

Rise in Customs revenue on hydrocarbon oils

Hydrocarbon oils duties in 1960-61 provided £408.8 million, compared with £381 million in the previous year. This is noted in the annual report of the Commissioners of Customs and Excise (H.M.S.O., price 12s 6d).

DISTILLATION COLUMN FOR FAWLEY



This 180-ft. distillation column, weighing 104 tons, was erected at Esso's Fawley refinery in only 31 minutes. Job was carried out by Matthew Hall and Co. Ltd., main contractors for the engineering design, procurement and erection of the Fawley extensions, of which this distillation column forms a part

Albright's new Calgon plant saves space for further organic units at Kirkby

A NEW large-scale plant to manufacture Calgon—a chemical used as a water softener and as a preventative of scale and corrosion in industrial and municipal water systems and as a constituent of detergent mixtures—is now in production at the Kirkby Works of Albright and Wilson (Mfg.) Ltd.

For many years, Calgon has been made in a number of small gas-fired furnaces at Oldbury and it became apparent that in order to gain efficiency larger scale manufacturing units were necessary.

The larger unit simplifies the handling of Calgon from the furnace to the milling, screening, mixing and bagging-off sections.

Two main problems had to be solved in the large plant. Firstly, a high temperature oil burner system was needed which would not deposit black carbon specks in the product, even on first ignition, and at the same time not cause excessive temperature on the furnace wall, or carry over molten Calgon to the flue system. The burners installed have shown they are capable of this duty.

Secondly, the existing casting method of feeding a small stream of the molten product between two water-cooled rollers could not economically be scaled up to match the output of the large Kirkby furnace. The company's own design staff overcame this problem.

Two furnaces have been installed, leaving space for a third to be added in future, in the main Kirkby manufacturing building. Small furnaces for special melts and the Domestic Calgon plant from Oldbury will shortly be moved to Kirkby.

To complement the new plant a warehouse and control laboratory were completed in time for the start-up.

A large part of the space liberated at Oldbury has already been assigned to new organic plants, and the construction of these commenced before the complete commissioning of the Kirkby unit.

Agip petrol sites acquired in U.K.

IT has been announced that Agip (Great Britain) have acquired 16 sites in the U.K. for the sale of Agip oil products. Agip is the marketing subsidiary of E.N.I. It was announced last month that the company intend to operate some 70 stations in the U.K. initially and they would probably be in the London and Manchester area. No further details are as yet available on the newly acquired sites.

★ THIS is the age of the 'giant' companies, made bigger by takeovers, and I have little doubt that the I.C.I.-Courtaulds merger will eventually go through. This is merely a case of repeating in this country a process that has seen the combination of many continental 'giants'.

The French chemical industry has, perhaps, led the way, not only with mergers, but with cross-linkings, carried out to such an extent that it would take an economic wizard to sort them all out. The latest is the proposed merger between Rhône-Poulenc and Celtex. Like I.C.I. and Courtaulds these companies have a common link in a synthetic fibre producer, in this case Rhodiaceta, who are also owned on a 50-50 basis.

Also in France, has been the merger for research and marketing between the two large companies, St. Gobain and Pechiney. This move could well lead to a complete integration. In Belgium, Union Chimique Belge are heading a merger of chemical and synthetic fibre interests, while in the Netherlands, a new large-scale fertiliser combine has emerged by the co-operation of three large producers.

★ CURRENT plans of the Laporte Industries Group include the extension and improvement of existing facilities as well as the acquisition of new ones.

Mr. P. D. O'Brien, chairman, recently said that the expansion programme included major extensions at the Stallingborough titanium oxide plant, the introduction of more modern activating plant at Redhill, increase of manufacturing potential of hydrogen peroxide at Warrington and the modernising of the barium processes at Luton.

This is certainly one of Britain's most progressive chemical groups for share capital rose 62% between March 1959 and March 1961, from nearly £16 million to more than £26.5 million.

★ I AM told by I.C.I. that there is no truth whatever in the rumour published in the *Financial Times* last week that the company is planning to build a paints production plant near Naples. This particular rumour surprised me for Italy is in many opinions already provided with more than enough paint.

Doubtless I.C.I., like many other British chemical producers, have been sounding markets in Italy and elsewhere in Europe, with a view to a more accurate assessment of their potential growth when the U.K. joins the Common Market. This probing of markets gives rise to countless rumours—it would need twice the number of pages each week if this journal were to publish all the rumours that come from "well-founded" or "reliable" sources.

Of much greater significance is the interest that I.C.I. will take up in Italy's largest fibre producers. Snia Viscosa, if their Courtaulds bid is successful. Courtaulds are the largest single shareholder in the Italian company, whose nylon-6 process has been licensed to British Celanese.

★ CHEMICAL industry management was able to enjoy its Christmas turkeys without the fear of a strike action, which appeared possible just before the holiday. It would have been a serious blow to the industry if its labour force, which in the past has always taken a much more responsible attitude on wages than many other industries, were to surrender to industrial anarchy.

As it was at their meeting last week, management and union representatives of the Chemical and Allied Industries Joint Industrial Council decided to ask for the service of an 'independent' mediator to help them resolve the impasse.

This 'independent chairman' will preside at the next meeting to be held on 25 January. It is to be hoped then that common sense will continue to prevail and that the chemical industry will be able to maintain its fine record of labour relations.

★ RECENTLY published report of the Committee on Scientific Manpower has been criticised for having said that the supply and demand for qualified personnel would be more or less in balance by 1965. It was interesting to note the comments made in the House of Commons last week by Mr. Denzil Freeth, Parliamentary Secretary for Science.

Mr. Freeth declared that no attempt was made to estimate the additional demand for scientists and engineers in management administration and sales, which doubtless will arise if employers can feel that availability of suitably qualified persons for such work is fairly widespread. Mr. Freeth added that if there were more scientists than needed for purely vocational occupations, the new concepts of scientific education would be required.

A further census of demand for scientists is to be taken in January—and in future this will take place every three years. Mr. Freeth's department is to have another look at the committee's estimates of long-term demand and at the assumptions on which they were based in the light of this fresh evidence.

★ FOLLOWING last year's successful annual meeting of the S.C.I. Overseas Section, the 1962 meeting is to be held in Stockholm. This has become one of the most popular meetings in the S.C.I. calendar and although titles of papers have yet to be published they will cover Sweden's pulp and paper industry, biochemical research, the pharmaceutical industry and the frozen food industry.

Visits will be made to Astra (pharmaceuticals); Siporex (equipment); Stockholm Brewery; Nobel Institute for Biochemistry; Wenner-Gren Centre; Wood Products Research Institute; Nobel Institute for Physics; LKB-Produkter (scientific instruments); Liljeholmens Stearinfabrik; Aga; Uppsala University; Pharmacia AB; Oxelosund Steelworks (Kaldo process); Skutskar Pulp Works; Uddeholms AB; Surte Glassworks; and Findus Frozen Foods, Malmo.

Full details are available from the hon. secretary, Mr. Paul Armstrong, of the Distillers, 21 St. James's Square, London S.W.1.

★ 'POLYMER Market Abstracts', Foster D. Snell Inc.'s marketing service, launched last May, is to expand in several directions, beginning with the January issue.

A number of European and Japanese rubber and plastics journals will be added to the list of information sources. The *Journal of Applied Polymer Science* will now be included so that PMA users will be able to anticipate technological advances in the field. A special section will be devoted to finished products of moulders, converters, extruders, etc. These products will be listed in tabular form, by material, showing the manufacturer and the country where the product is being made. Thus the new-products from the entire world will be summarised in the space of a few pages.

Begun as an experiment, the demand for the journal has well exceeded hopes. It is the first of a planned series of specialised marketing services which are to be announced at intervals by Snell Inc.

Alembic

I.C.I.—Courtaulds merger

COURTAULDS SEEK ADVICE FROM MERCHANT BANKERS

TAKE-OVER offer of Imperial Chemical has prompted Courtaulds Ltd. to call on the services of Baring Brothers, merchant bankers, their financial advisers who acted for them in their take-over offers for British Celanese Ltd. and Finchin Johnson. Sir John Hanbury Williams, Courtaulds' chairman, returned to the U.K. last week and no reply to the I.C.I. terms is expected until the New Year.

Rumours circulating in London last week, after I.C.I.'s offer had been made public, to the effect that E. I. du Pont de Nemours were making a counter-bid for Courtaulds has been categorically denied. Du Pont stated that no bid had been made, and that they were not even contemplating such a step. Courtaulds also denied having received such an approach.

The London Stock Exchange seems to share the confidence of I.C.I.'s chairman, Mr. S. P. Chambers, as to the successful outcome of the proposed merger. Some dealers have been switching from I.C.I. into Courtaulds, indicating that investors are also convinced that the bid will be a success.

The following table, compiled by CHEMICAL AGE, shows how I.C.I. and Courtaulds stand separately and as an integrated group in relation to other of the world's major chemical companies.

	Total sales	Net income after tax
	£m	£m
Standard Oil	4,550	343
Royal Dutch/Shell ...	2,674	177
Du Pont	765	136
I.C.I.-Courtaulds ...	741	55
I.C.I.	569	45
Union Carbide ...	557	57
Monsanto	320	24
Dow Chemical... ...	280	29
Allied Chemical ...	275	18
Distillers	263	17
Bayer	255	10
Olin Mathieson ...	247	12
Hoechst	245	9.7
B.A.S.F.	235	11
Cynanamid	208	17
Montecatini	162	7
Hercules Powder ...	121	9
Pechiney	70	2.4
British Oxygen ...	62	4.7
Kuhlmann	46	1.2

On his return to the U.K. on 22 December, Sir John Hanbury-Williams, chairman of Courtaulds, had "absolutely no comment" to make on the I.C.I. share offer.

No public inquiry on I.C.I. offer

OPPOSITION attempts to refer I.C.I.'s bid for Courtaulds to the Monopolies Commission were roundly rejected, both in the House of Commons and the Lords last week.

Lord Hailsham said there were no powers to refer the desirability of the purchase of shares to the Monopolies Commission. That did not mean there was nothing that could be referred to the Commission should the merger go through.

Monopoly conditions already existed in man-made fibres, independently of the proposed merger, because of the interconnecting shareholdings of the two firms and of a third firm. The effect of the merger here would be marginal.

In the Commons, Mr. F. J. Erroll, President, Board of Trade, said he had no power to refer the proposals to the Monopolies Commission. He also refused to try to prevent the merger until an inquiry had been made, and rejected the view of Mr. D. Jay (Lab., Battersea, North) that the merits of the case from the point of view of public interest should be argued before a public tribunal.

The Minister thought it fairly clear that those who proposed the merger would have the interests of the companies in mind and naturally of their staffs. The public interest was best served, he declared, by their continuing to sell their products as cheaply and as efficiently as possible. Only in that way could they remain a profitable undertaking.

New process for decontaminating catalysts may be licensed to industry

A PROCESS for removing metal contaminants from fluidised alumina-silica catalyst beds of catalytic crackers has been developed by the Atlantic Refining Co. Called MET-X (metals out), the process is already in operation at the company's Philadelphia refinery, and is expected to add at least $1 million to the yearly net income.

The procedure is not revealed in detail, but it is described in outline in a recent issue of *Chem. and Engg. News*. Part of the catalytic cracker's 500-ton charge of catalyst, contaminated by metals from the off-gas feedstocks, is continuously drawn from the catalyst stream circulating through the cracker at a rate of 1,800 tons/hour. The contaminated catalyst is mixed as a water slurry with a strong cationic ion exchange resin. The metal contaminants in the catalyst are replaced by hydrogen ions since the resin has a greater affinity for metals than the catalyst. The conditions for this stage are apparently quite critical.

The treated slurry is fed into a continuous process separating unit. The catalyst, after concentration by filtration, is dried and stored for subsequent re-addition to the cracker.

The resin is sent to a regenerator where it is first washed with used acid then with a clean acid wash and finally demineralised water. Very little catalyst or resin is lost in the process.

The contaminating metals occur on the catalyst surface in organic forms such as porphyrins which are usually difficult to remove. Previous attempts to remove them by acid washes resulted in a deterioration in catalyst property. The new process, however, does not significantly change the catalyst. It retains its activity, base selectivity, and resistance to attrition, but has more resistance to thermal (including steam) deactivation than untreated catalysts.

The MET-X unit in operation decontaminates about 40 tons of a catalyst a day. The system is highly automatic; only a few controls are operated manually and these, too, will shortly be made automatic.

Atlantic plan to make the process available to industry through a licensing programme, but it will have to be modified for each catalyst system if that system is different from Atlantic's in either shape or composition.

Air-free encapsulation mixture ensured

THE removal of air dispersed in mixture prepared for encapsulation is a problem which is being tackled by the installation of new equipment—the Becker mixer—at the Slough works of R. P. Scherer Ltd.

Under the new process, the powders are first placed in the mixing pan which is then evacuated to 29 in. of mercury. The vacuum is used to draw the liquids gradually into the pan while a planetary rotating blade works with a shearing movement against a fixed central blade, kneading the ingredients first into a dough and then, as more fluids are added, into a fluid mix free from both dissolved and entrapped air.

The pans are fitted with valves so that when the mixing is complete, the mixture can be pumped directly through a carborundum mill without any aeration. Screening after milling adds very little air, which, since it has not passed through the mill can be removed easily by passing over baffles into an evacuated vessel.

In addition to solving the problem of de-aeration, the mixer has been found to produce a better quality mixture with less labour and in less time than the methods previously used. Jacketed pans enable mixing to be performed at controlled temperatures when required.

C.A. Directory is guide to 1,700 chemicals and plant firms

ONE of the most widely-read sections of the CHEMICAL AGE DIRECTORY AND WHO'S WHO, the Buyers' Guide, is an indispensable aid to buyers of chemicals and chemical equipment. It is also an invaluable pointer to new sales outlets. More than 4,100 different products of 1,700 supplying companies are listed alphabetically.

For the 1962 edition, a new Buyers' Guide has been added—that for laboratory apparatus and scientific instruments. Other sections cover chemicals and chemical plant and equipment (including protective clothing and packaging).

Sections listing trade names and trade marks have also been expanded, as is the Master Index, now occupying 30 pages. Names and addresses of all the companies mentioned in the Buyers' Guide are given here, along with telephone numbers and telegraphic addresses, making the Directory a comprehensive guide to the products and services of the British chemical and allied industries.

The editorial section of this Directory includes a new feature on independent consulting chemists and chemical engineers, listing the names and addresses of practices, names and qualifications of principals, interests covered and indicating the availability of research facilities. The names of practices are also listed under an alphabetical subject index.

Who Owns Whom

The Who Owns Whom feature of the Directory has been entirely revised with a comprehensive index which shows at a glance the structure and grouping of the British chemical industry. Also expanded is the Who's Who of the Chemical Industry, which now names more than 5,000 executives in the chemical industry, as well as chemists and chemical engineers in Government and educational circles. Included are qualifications, present position, name and address of organisation and offices held in learned societies or trade associations, plus awards.

Names and addresses of more than 200 professional organisations, learned societies and trade associations are included, with the names of secretaries and telephone numbers. Other sections give similar information on the Department of Scientific and Industrial Research (headquarters and research stations), research associations, agricultural research institutes, Government and State departments of interest to the chemical industry, including the various Ministries, Atomic Energy Authority, British Transport Commission, Central Electricity Generating Board, Gas Council, National Coal Board, etc.

A special seven-page section deals with U.K. teaching facilities for chemistry and chemical engineering, listing professors, heads of departments, etc., in British universities, colleges of technology as well as more than 200 technical colleges that provide courses in chemistry and chemical technology.

The CHEMICAL AGE DIRECTORY AND WHO'S WHO gives more information on the British chemical industry that is available in any other single book of reference. Copies of the 1962 edition, priced at 45s (25s to subscribers) can be ordered by completing the coupon on page 1037).

Approved agricultural chemicals

THE following further additional products have been approved under the Agricultural Chemicals Approval Scheme:

INSECTICIDES *Diazinon:* Basudin mushroom aerosol (W. Darlington and Sons); *Tetrachlorodiphenylsulphone:* Midox Tedion V-18 (Rentokil Products).

HERBICIDES *2,4 DB: Embutox* (May and Baker); *Dichloroprop:* Cornox RK (Boots Pure Drug Co.), Marks Polytox (A. H. Marks and Co.), Stancide MCPB (S.D.C. Pesticides), Stancide Plus MCPB/MCPA (S.D.C. Pesticides), Tropotox Plus (May and Baker); *Methoxychlorbenzoic acid with MCPA:* Banlene (Fisons Pest Control), Econal (Baywood Chemicals).

New D.C.L. film on carbon dioxide–silicate process for foundry sands

THE new 22-minute colour film produced by the Chemical Division of the Distillers Company Ltd., 'Carbon dioxide in steel foundries', demonstrates an advanced application of the CO_2/silicate process for hardening foundry sands.

The film shows how a spur gear wheel in steel of over 15 ft. in diameter and weighing 6 tons 2 cwt. was produced in seven days, compared with three weeks using traditional methods.

The film shows the entire production cycle from the ramming of the sand into the four collapsible flasks in which the mould sections are shaped, through to the teeming and breakdown stage, and the emergence of the finished casting.

The film, shot at the Glanmorfa foundry, Llanelly, who were pioneers in the use of the CO_2/silicate process, is available on free loan from January on application to D.C.L. at Devonshire House, Piccadilly, London W.1.

This 'shot' from the film 'Carbon dioxide for steel foundries' shows the placing in position of a section of the mould. Sections are assembled in sequence

Wellcome research spending passes £1.75 m. mark

ANNUAL research expenditure by the Wellcome Foundation has now passed the £1.75 million mark, disclosed Mr. M. Pervin, F.R.I.C., chairman of the Foundation at the recent annual meeting. Among the new products, the result of seven years' research, was the seven-in-one sheep vaccine made available in October.

In 1960, the directors took the decision to close down work on the production and further development of the Salk-type polio vaccine and concentrate on a major effort on the attenuated living virus vaccine using Sabin strains. The decision has been fully justified.

There were quite a number of new leads emerging from chemotherapeutic research in the U.K. and the U.S. company at Tuckahoe, where work continued also on the cytostatic drugs project which has already yielded useful results.

In spite of the less favourable trading conditions, the total value of sales had registered a slight increase on the record established last year. A fall in sales in the home market had been offset by an increase in direct exports.

World platinum production in 1960

Total world production of platinum-group metals in 1960 is estimated at 1,190,000 tons, by the U.S. Bureau of Mines, compared with 1,010,000 tons in 1959, 890,000 tons in 1958 and 1,320,000 tons in the record year of 1957. Of the 1960 total, 483,930 tons were produced in the U.S., 28,855 tons in South America; 275,000 tons in the U.S.S.R., 1,960 tons in Asia; 405,189 tons in Africa; and 22 tons in Oceania.

FOREIGN INVESTMENT IN INDIA

Collaboration covers wide range of organic and inorganic chemicals

BRISK activity in various fields of manufacture in India during 1961 has aroused considerable interest among foreign enterprises who have offered technical as well as capital participation in India's industrial projects. The principal countries participating in new Indian ventures are U.K., U.S., France, Italy, Switzerland, West Germany, Norway, Japan, U.S.S.R., Hungary, East Germany, Finland, Poland and Czechoslovakia.

U.S. collaboration has been obtained for the manufacture of synthetic rubber, polythene, carbon black (Duncan Brothers in Assam), p.v.c. (Goodrich Chemical—India Cements), pulp and paper, synthetic resins, chemicals and textile finishes U.K. firms are well to the fore in industrial machinery and equipment. Krebs of France will collaborate with West Bengal Government to set up a chemical industry in Durgapur. West German firms will help in the manufacture of chemicals (Dr. Paul Lohmann, near Calcutta), photographic printing paper and refractories. A dyestuffs plant near Calcutta will be set up with Japanese collaboration. Swiss collaborators are active in the field of chemical plant, plastics, synthetic fibres, etc.

During the quarter ending March 1951, 101 foreign collaboration agreements were formally approved: 30 with the U.K.; 24 with West Germany; 14 with the U.S.; 10 with Switzerland; seven with Japan; five with Soviet-bloc countries; 11 with other countries.

Organic chemicals

Large-scale developments are visualised during the next five years in the field of organic chemicals following the build-up in demand over the last decade for many items as a result of the growth of industries like plastics, dyestuffs, and drugs. The manufacture of vinyl chloride monomer and styrene monomer, butadiene, carbon black and rubber chemicals, butyl alcohol and its esters, citric acid and oxalic acid, all of which, it is proposed, will be undertaken for the first time in the private sector, deserves mention in this connection.

Major developments are also visualised in the public sector through the basic chemicals and intermediate plant (B.C.I.) being set up with collaboration of Bayer near Panvel in Maharashtra State. The B.C.I. project as the supplier of intermediate chemicals is firmly linked with the synthetic drugs projects to be set up with Soviet technical and financial collaboration. A new company—Indian Drugs and Pharmaceuticals Ltd.—has been registered in New Delhi with an authorised capital of £11.25 million to implement the drug projects to be set up with the assistance of the U.S.S.R.

Detailed reports on the project have been received from Soviet experts. The reports relate to the antibiotics plant (300 tons a year of penicillin, streptomycin, tetramycin, etc.) in Rishikesh (Uttar Pradesh); the phytochemical plant for manufacturing caffeine from tea waste, reserpine, vitamin P, etc. at Neriyamangalam (Kerala State); the synthetic drugs factory for producing sulpha drugs (850 tons a year) at Sanatnagar (Hyderabad), and the surgical instruments factory in Madras. All the four factories are expected to go into production in 1964.

Soviet aid

The four projects are estimated to cost £30 million. The Soviet Union has extended a credit of 80 million roubles (about £7 million) to meet the foreign exhange expenditure. Russians will render technical assistance, train Indian technicians and supply the necessary machinery. A team of 100 Soviet engineers and technicians arrived in India during October to organise the projects.

Petrochemicals. A petrochemical plant is to be set up at Nahorkatiya (Assam) by Assam Gas Co., a State undertaking. The plant is expected to be commissioned by the middle of 1963.

The decision follows the recommendation of a committee appointed by Indian Government a year ago, which found an urgent need and tremendous scope for the development of petrochemicals, and recommended that it should be left open to both the Government and private enterprise.

The Assam Government's project is expected to utilise, in the first phase, 40 million cu. ft. of gas for the manufacture of 343,000 lb. of ethane, 856,000 lb. of propane, 780,000 lb. of *iso*-butane, and 505,000 lb. of pentane per annum. During the second phase, the plant will consume 70 million cu. ft. of gas and manufacture 600,000 lb. of ethane, 1,500,000 lb. of propane, 1,350,000 lb. of *iso*-butane and 360,000 lb. of pentane.

The Indian Government have also approved the scheme of Standard Vacuum Oil Co. to manufacture, at their refinery in Trombay (Bombay), 100,000 tons/year of several petrochemicals. The company had proposed a plant of double the capacity in the interest of plant economies.

The Stanvac plant will utilise feedstock from the refinery and process naphtha into ethylene, propylene and butadiene and possibly some other chemicals which can be used as raw materials in the plastics industry.

Polystyrene. Shree Ram Mills, Bombay, have received an industrial licence to set up a plant for the manufacture of 10,000 tons/year of styrene monomer and 7,500 tons a year of polystyrene. The proposed plant is likely to be located in Visakhapatnam. The Andhra Government has assured the supply of alcohol and other facilities for the project. The company is now negotiating for foreign co-operation.

The project, which is estimated to cost nearly £3.75 million, will be undertaken by a new company to be known as Hindustan Polymer Ltd.

Polyester Fibre. Imperial Chemical Industries (India) P. Ltd. have promoted a new company to be known as Chemicals and Fibres of India Ltd. to make 4.5 million lb. of polyester staple fibre, certain dyestuffs and chlorine-based products. The £3.75 million plant will be located in Thana, an industrial suburb of Bombay and is likely to be in production in 1964.

I.C.I. Terylene

Polythene. Alkali and Chemical Corpcration, Calcutta, have been licensed to produce 8,500 tons of polyethylene in Rishra (West Bengal). This is in addition to two other licences issued earlier, one to Union Carbide India Ltd. for expanding their existing capacity to 20 million lb. at Trombay (Maharashtra State) and the other to Duncan Brothers, Calcutta, to manufacture 4,000 tons of polythene in a new plant in Assam.

Cellulose Acetate. East Anglia Plastics (India) Ltd. have received an industrial licence to establish a new undertaking in Andhra Pradesh for the manufacture of cellulose acetate flakes, diacetates and triacetates.

The licence includes the manufacture

Indian producer	Capacity tons/year	Foreign collaborator
Caustic soda		
Dhrangadhra Chemicals	50,000	—
Mettur Chemical and Industrial	18,000	Being negotiated
Tata Chemicals	16,000	—
Travancore-Cochin Chemicals Ltd.	15,000	Switzerland
Kanoria	17,000	Switzerland
Union Government plant	4,000	—
Total (1965-66)	400,000	
Calcium carbide		
Industrial Chemicals Ltd.	10,000 (1964)	—
Travancore Electrochemical Industries	10,000 (1962)	East Germany (Dr. A. Invest)
Total (1961)	26,500	
(1964)	48,500	
Titanium oxide		
Botaniam Ltd.	5,000	U.K. (Laporte Titanium Ltd.)
Travancore Titanium Products	Expansion in progress	—
Hydrogen peroxide		
National Peroxide Ltd.	3,000	U.K. (Laporte Chemicals Ltd.)
Dyestuffs		
Hickson and Dadajee (P) Ltd.	273	U.K. (Hickson & Welch Ltd.)
Indian Dyestuffs Industries Ltd.	100 400 expansion planned	Italy (A.C.N.A.)
Universal Dyestuffs Industry	138	France (Francaise des Matieres Colorantes)
Polythene		
Alkali and Chemical Corp.	8,500	U.K. (I.C.I.)
Duncan Bros.	4,000	U.S. (Philip's Peteroleum)
Union Carbide (India) Ltd.	6 m. lb. (20 m. lb. expansion planned)	U.S. (Union Carbide)
P.v.c.		
Delhi Cloth and General Mills Co. Ltd.	6,000	Japan (Shin-Etsu Chemical Industries, Mitsui Bussan Kaisha)
Dhrangadhra Chemical Works Ltd.	6,000	—
India Cements Ltd.	5,400	U.S. (Goodrich)
Synthetic resins		
Bombay Chemical Private Ltd.	250	—
Cibatul	—	U.S. (American Cyanamid) Switzerland (Ciba)
Modinagar	36	—
Noble Paints and Varnish Co	120	—
Ratland Chand Harjasram (Plastics)	420	—
Reichhold Chemicals (India)	1,500	U.S. (Reichhold, Simpson)
Polystrene		
Hindustan Polymer	10,000 (monomer) 7,500 (polymer)	Being negotiated
Polyester fibre		
Chemicals and Fibres of India	4-5 m. lb.	U.K. (I.C.I.)
Sulphuric acid		
Adarsh Chemicals and Fertilisers Ltd.	—	—
Alembic Chemical Works	—	—
Bhilai Steelworks	300,000 (1963)	—
Botanium Ltd.	80,000	U.K. (Laporte Titanium Ltd.)
Fertilisers & Chemicals Travancore Ltd.	97,000	—
Hindustan Heavy Chemicals Ltd.	—	—
Mysore Chemicals and Fertilisers Ltd.	—	—
Nepa Chemicals	3,600	—
Total (1960-61)	400,000	
(1965-66)	1,250,000	

of organic chemicals, such as acetic acid and acetic anhydride required for the production of cellulose acetate. The expansion scheme will cost about £3.75 million.

The company's works at Dum Dum, near Calcutta, for the production of acetate moulding powder and p.v.c. compounds is likely to go into production by the end of the year.

P.V.C. Project. Plans are under way for setting up an integrated project for manufacturing polyvinyl chloride, calcium and liquid chlorine. The project, being promoted by the Sahu-Jain group of industries, will produce 12,000 tons of vinyl resins a year. This is the biggest project of its kind licensed by the Indian Government so far. Licences for calcium carbide and liquid chlorine are being considered. The p.v.c. project is estimated to cost £3.75 million.

Maruben-Idda Co. Ltd., Japan, will collaborate in the venture. Another Japanese company, Kurecha Kesai and Co. Ltd., will also provide technical know-how for the p.v.c. and liquid chlorine projects; Showa Denko K.K. will collaborate in the calcium carbide project. The Indian firm, Dhrangadhra Chemical Ltd. will supply the chlorine requirements of the undertaking.

Synthetic Resins. A new company, Reichhold Chemicals (India) Private Ltd. has been jointly promoted by Reichhold Chemicals Inc. of White Plains, New York, and Simpson and Co. Ltd., Madras, to produce all types of synthetic resins which are currently being made by Reichhold Chemicals or their associates in various parts of the world. The plant, to be set up in Madras, will have a capacity of 1,500 tons of resins a year.

Mettur Chemicals. The Mettur Chemical and Industrial Corporation (Madras State) have decided to raise their output of caustic soda from 40 to 100 tons a day and to commence the production of chlorine-based organic chemicals like methyl chloride, methylene dichloride, chloroform, ethylene dichloride, bromine, carbon tetrachloride and pentachlorophenol. The additional production of caustic soda will be of rayon-grade quality. These schemes will entail additional capital expenditure of about £1.85 million. The company will seek foreign collaboration for know-how, as well as capital participation with a view to covering the foreign exchange needs of the project.

Atul Products. A new enterprise, Cibatul Ltd., has been formed by Atul Products Ltd. of Bombay in partnership with Ciba Ltd., Basle, to handle the manufacture of some urea formaldehyde products and intermediates and bases for sulpha drugs. The Swiss firm is suppling the know-how for manufacturing intermediates. Atul Products have also purchased know-how from Rohner Ltd., Prattelen, Switzerland; engineering will be carried out by Humphreys and Glasgow, London.

Phosphate Processing Plant. The National Industrial Development Corporation, a State-owned company, is considering the setting up of a £2.25 million project to process phosphate rocks

Protection on titanium oxide will stabilise Travancore production

imported from Jordan and Morocco at Mangalore (Mysore State).

The phosphates thus produced will meet the bulk of the country's needs for fertilisers and industrial products.

Phosphorus Plant. A yellow and red phosphorus plant with a capacity of 6,000 tons is proposed for Mysore State. The plant, to be set up at a cost of £2 million will be jointly owned by Mysore State Government and the Central Government.

Lederle Antibiotic Plant. The £750,000 fermentation plant of the Lederle Laboratories (India) Private Ltd. will go into production by the end of the current year. Situated in Bulsar (Gujarat), the plant will manufacture antibiotics such as tetracycline, chlortetracycline and dimethyl chlorotetracycline. The plant has production capacity of 10 tons of aureomycin and achromycin a year. The entire production of aureomycin and achromycin will be used for the company's pharmaceuticals.

American Cyanamid have designed and constructed the plant. Indian share in the capital amounting to £180,000 is being provided by Atul Products.

Second CMC Plant

CMC. An Ahmedabad firm, Cellulose Products of India Ltd., has been licensed to set up a sodium carboxymethyl cellulose unit with a capacity of 1,500 tons a year. This will be the second CMC unit in India, the first recently going into production at Bilimora near Ahmedabad (Gujarat State) with a capacity of 1,200 tons/year.

Titanium Oxide. Laporte Titanium Ltd. will collaborate with Botanium Ltd., a new company which has been promoted by N. Wadia and Sons for the production of titanium oxide and sulphuric acid. The factory will be located near Bombay, and will have a monthly production capacity of 420 tons of titanium oxide and 100 tons of sulphuric acid.

The Indian Tariff Commission has recommended that the protection now enjoyed by the titanium oxide industry should be continued at the existing rate of protective duty of 35% *ad valorem* (preferential) and 45% *ad valorem* (standard). The recommendation has been accepted by the Government.

The Commission accepted the plea of Travancore Titanium Products Ltd. (the only Indian producers of titanium oxide, that protection should be continued to enable them to stabilise production after heavy initial capital outlay, and to assist them in establishing a market for rutile, which they will shortly start producing.

India's present capacity for titanium oxide is 2,900 tons/year and likely to rise to 11,070 tons by the end of 1963, if Travancore Titanium Products complete their expansion scheme and the new company, Botanium, also completes their plant.

Current Indian demand for titanium oxide is estimated at 5,500 tons (4,000 tons for anatase and 1,500 tons for rutile); by 1963 this is likely to reach 8,500 tons (6,000 tons anatase and 2,500 tons rutile).

Carbon Black. Current Indian demand for all grades of carbon black is of the order of 13,000-14,000 tons a year; by 1965-66 this is expected to rise to 30,000 tons. To achieve this production, two units, one in Durgapur and another in Assam, have already been licensed with a combined capacity of about 24,000 tons a year.

The Indian Government feels that there is scope for setting up one more unit in western India to cater for the requirements of rubber products manufacturing industry situated around Bombay. Recently, however, five applicants for setting up new carbon black units were rejected by the licensing committee because the applicants were unable to fulfil the necessary conditions with regard to technical collaboration and manufacturing process based on indigenously available natural gases, refinery gases and petroleum residues or coal tar residues.

It is understood that Voltas Ltd., Bombay, distributors for Columbia Carbon, have informed the Central Commerce Ministry that their principals are planning to submit a proposal for the manufacture of carbon black from locally-available raw materials in collaboration with an Indian company and with dollar capital.

Cabot of the U.S. have also renewed their interest in the manufacture of carbon black in India.

Dyestuffs. French technical collaboration is envisaged for a vat dye project being set up in Gujarat State by Universal Dyestuff Industries. Negotiations are in progress with Cie de Francaise des Matiéres Colorantes of Paris. The project is designed to produce 138 tons of vat dyes and 30 tons of optical whitening agents a year. The factory is to be commissioned by the end of 1962.

Indian Dyestuff Industries Ltd., Bombay, have decided to expand their production to 500 tons of vat dyes and 750 tons of intermediates in one stage. Although the original intention was to implement the programme in three stages, the company will now reach full production by the end of 1962. The integrated expansion scheme is estimated to cost about £3.5 million.

Dissolving Pulp from Hard Woods. South India Viscose Ltd., propose to set up a plant in Coimbatore for the manufacture of 21,000 tons/year of cellulose from eucalyptus and wattle. The company is collaborating with Snia Viscosia, Milan. Indian imports of dissolving pulp are of the order of 50,000 tons; demand will increase to 88,000 tons when the capacity licensed for rayon materialises. By 1966, the requirements of viscose yarn, staple fibre, cellulose film, cellulose acetate and cuprammonium, all of which require dissolving pulp, are placed at 360 million lb.

Urethane paints weather corrosive atmospheres in field tests

TWO years' weathering and exposure to hydrochloric acid fumes and chloromethane vapours have not harmed the finish of six outside storage tanks in a U.S. chemical plant which had been protected with urethane paint specially designed for this type of application. The paint retained excellent continuity, showed no cracks and virtually no gloss reduction.

This is reported by Allied Chemical International, New York, who state that phenolic paint applied to the same tanks in August 1954 began to crack and blister a year later, while, after five ye... it had blistered, peeled and stained and required replacement. It was at this point that the original paint was sand-blasted off, a primer and two coats of a specially developed 'two-can' urethane paint, made with Allied Chemical's isocyanates, were applied.

In another application, a new pipeline in a vinyl chloride plant was coated with urethane paint in May 1959. After two years' exposure to hydrochloric acid fumes and vinyl chloride vapours, the urethane finish is in excellent condition. An amine-cured, catalysed epoxy and phenolic paint used on similar pipes and other plant installations showed initial signs of failure after about one year.

Additional tests are being conducted to determine further areas of chemical resistance and weatherability of urethane paint.

Translation of Soviet petrochemical journal

A NEW journal will be available from March 1962 called *Petroleum Chemistry U.S.S.R.* It is the English edition of the Russian journal *Neftekhimiya* which began publication in 1961 and has six issues a year. The object of the journal is the bringing together of the work of the leading U.S.S.R. investigators in the fields of petroleum chemistry and of petrochemicals in industry.

Published by Pergamon Press, Headington Hill Hall, Oxford, the subscription for the new journal will be £30 a year.

Improved sulphite processes can yield cheaper pulps

IS the sulphite pulping process due for a big come-back despite strong competition from kraft processing, hitherto regarded as having the 'edge' over sulphite economically? According to a recent study, new processing methods, especially the bisulphite and multi-stage processes, have improved the competitive position of sulphite pulp, and it has even been demonstrated that sulphite pulp prepared by these modified methods has certain advantages over kraft pulp in many situations.

Moreover, it now appears feasible to use unbleached sulphite pulps to advantage in some applications because they have desirable properties and can be produced at a lower cost than kraft. At equal bleached brightness, the sulphite process—even with recovery—can produce a less expensive pulp from a particular wood species in a given location than the kraft process.

The promising potential of sulphite pulp is noted in a report, based on a 20 months' study, which was recently presented to 30 companies in the U.S., Canada, Europe and Japan who supported the study. Chemical engineers of Arthur D. Little Inc., the U.S.-based industrial research organisation, examined the modified sulphite pulping processes and methods for spent liquor treatment before reaching this and related conclusions. From this comprehensive survey, they chose about 20 processes for detailed study. In order to establish evaluation criteria, the industrial research team developed data on properties of pulps from these processes and generated process flow diagrams and operating cost data from all available sources, including study of pulp mill operations in North America and Europe.

Renewed Interest

The renewed interest in sulphite pulping resulting from such technological developments as bisulphite systems, multi-stage processes and methods for recovering soluble base cooking chemicals has made it necessary for the industry to re-evaluate competing techniques. In the U.S., increasing governmental pressure to reduce stream pollution and a growing demand for tailor-made pulps have intensified this interest. The rapid changes in this field have made timely a re-assessment of the technology.

The report concludes that, all in all, on the basis of improved technology, the sulphite segment of the industry can compete more vigorously and effectively within the industry. It is suggested that, in fact, the whole pulp and paper industry should be interested in the new developments—the sulphite producers to take advantage of the new technology, and the kraft producers to develop combined sulphite and kraft operations with greater flexibility. The two processes can be operated together on a technically and economically sound basis, and if many varieties of pulps were available from an integrated kraft-sulphite system, new and improved paper products should follows.

During the course of the study the multitude of proposed methods for treating spent liquor were evaluated; there are available methods which can be integrated with all the sulphite pulping systems. This fact itself eliminates one of the major advantages enjoyed by kraft systems in recent years. Also, both air and water pollution can now be reduced further with sulphite than with kraft odours; water pollution is reduced because, for example, there is a smaller load of dissolved organics in the bleach plant effluent.

Generally, the increased use of spent liquor recovery systems will tend to decrease chemical consumption. But since soluble bases are best from the standpoint of pulping, there might eventually be a net increase of soluble base consumption in sulphite pulping. Processes using magnesium and ammonia as bases are already being vigorously promoted by the chemical and equipment suppliers with some success. While sodium has not been promoted as effectively or used as widely as these other bases, there are indications that this base will be used increasingly as better soda base recovery systems are developed.

Scandinavian cellulose makers agree to output and price cutback

SCANDINAVIAN producers of chemical cellulose have agreed to a production cutback over the coming year totalling some 20%, or about 1 million tonnes, of the combined Swedish, Norwegian and Finnish supply to world markets. Next year's output is expected to be of some 2,700,000 to 2,800,000 tonnes in Sweden, about 425,000 tonnes in Norway and some 1,700,000 tonnes in Finland. The production decrease will be spread over the various manufacturing concerns according to individual capacity.

This decision follows a long period of rumours and vague reports and comes in its volume as something of a shock, a cutback averaging 15% having been expected. In fact, the level of production decreases will not be the same for all three countries concerned, Sweden restraining output to a relatively considerably greater extent than Finland and Norway.

Although Sweden and Finland will both have a relatively similar share of unused production capacity next year (something over 20%)—Norway is in a better position as far as the capacity-production ratio is concerned. Sweden is faced with stocks expected to reach 500,000 tonnes by the end of this year, while the other two countries do not have to contend with such a problem.

Sweden, too, is faced with sharp falls in exports; over the first 10 months of 1961, compared with the corresponding period of last year, sales of viscose cellulose fell from 355,000 to 300,000 tonnes and those of other chemical cellulose from 1,684,000 tonnes to 1,574,000 tonnes. In comparison, Finnish exports for this year are expected to exceed those for 1960, although sales for the January-August period of 1961 were lower than those for the comparative 1960 period. The Norwegian production decrease, if in fact there is one for this year, will be of minimal due to the cautious build-up of capacities in that country.

The need to reduce production, which despite falling sales is still rising—in Sweden by 100,000 tonnes by October 1961—is brought about by the current overweight of capacity against demand and competition from Canadian and U.S. producers, particularly in West European and Latin American markets. The unsatisfactory price situation has already had its effect, and Swedish producers have set new price levels accordingly for sulphite cellulose, sulphate cellulose and rayon cellulose for the first 1962 quarter.

Nevertheless, the crisis is regarded as very temporary in nature and the expansion of demand is expected to resume at a dynamic rate soon enough for Swedish, Finnish and Norwegian capacities to jump by several millions of tonnes by 1965 and even further later.

A slight alteration to the picture might possibly be made, however, by the planned reduction of Common Market external tariffs for paper semi-products discussed in Brussels early this month. With the interest the U.K. has in the Common Market of today and a possibly wider area in the future, it could be of interest to study these plans. This is particularly the case as the West German and Dutch cellulose and paper industries, currently with a negative development, could go all out to capture new customers in Britain with advantageous conditions of sale.

Will

Mr. Donald James Leitch, formerly governing director of John W. Leitch and Co. Ltd., chemical manufacturers, Milnsbridge, left £116,824 net, duty £58,594.

Overseas News

U.S. PROPIONIC ACID OUTPUT ESTIMATED AT 35 M. LB. IN 1965

UNITED STATES production of propionic acid has shown an annual growth rate of 15.8% a year from 1954 to 1960—from 12.8 million lb. to 29.6 million lb., states '*Oil and Paint and Drug Reporter*', 4 December, in a special survey. Production of 31 million lb. is forecast for 1961, rising to an estimated 35 million lb. by 1965. Capacities, which are flexible, are said to total 40.7 million lb. with Celanese of America (LPG oxidation process), Du Pont (modified oxo), Eastman (oxo) and Union Carbide (oxo), each with capacity for 10 million lb./year.

It is believed that while sodium and calcium propionate have been in use for about 25 years, they were passed as the largest single propionic customer in the year 1960 by the cellulose propionates. Other large uses include herbicides, cigarette filters and pharmaceuticals.

Two applications in Europe that have not been commercially adopted in the U.S. are B.A.S.F.'s polyvinyl propionate, a 50% dispersion for paint latices and adhesives that is produced in several thousand tons a year and dilauryl 3,3'-thiodipropionate, an antioxidant for polyolefins. This product was brought on stream by Robinson Brothers Ltd., West Bromwich, in November.

Goodyear to build rubber plant in France

Goodyear are to build their first synthetic rubber plant outside the U.S., at Le Havre, in France. The plant, to cost an estimated $6 million, will be in production in 1963.

The other main U.S. tyre firms all have synthetic rubber interests in France. Firestone are nearing completion with their 15,000 ton butadiene plant at St. Jérome. Dunlop and Kleber-Colombes both have holdings in Socabu and Michelin are beginning work on their plant near Bordeaux which is scheduled for completion by the end of 1963.

Phenol price falls in U.S.

Dow Chemical Co. have announced the dropping of their phenol price from 16½ cents to 14½ cents/lb. It is expected that other U.S. producers will follow suit.

Upward revision for A.N.I.C. Gela capacities

A revision of the capacities of the plants which A.N.I.C., a subsidiary of the Italian State-controlled E.N.I., are building at Gela, Sicily (see CHEMICAL AGE, 15 November 1960) have been announced. Mr. Enrico Mattei, president of E.N.I., said in a speech made when the President of Sicily visited the Gela site that the following products would be produced: Fuel oil, 1.2 million to 1.5 million tonnes; LPG, 200,000 tonnes; ammonium sulphate, 165,000 tonnes; urea, 100,000 tonnes; aromatic hydrocarbons, 60,000 tonnes; ethylene, 50,000 tonnes; polythene, 25,000 tonnes; ethylene oxide, 20,000 tonnes; ethylene glycol and ethanolamine, 18,000 tonnes. It was announced that the new plants will go on stream in September 1962.

More carbide, chlorine capacity for Pechiney

The French chemical company Péchiney, the administration of whose chemical works, and those of the Saint-Gobain concern, come under the joint subsidiary Société des Produits Chimiques Péchiney-Saint-Gobain from 1 January announces that during 1962 work will be completed on the erection of a new carbide furnace at Saint-Aubun and new chlorine electrolysis capacities at Lavèra. The associated Naphtachimie concern, which currently has a capacity of 48,000 tonnes/year of ethylene, is to open new cracking units with a capacity of initially 30,000 tonnes.

The Organico company has passed on its textiles department (hitherto administered by Société Valentinoise d'Applications Textiles) to the Saint-Gobain group synthetic-fibre concern Rhodiaceta and will in future concern itself exclusively with the production of the base material, Rilsan. The Plastichimie company of the Péchiney framework started Dow-process polystyrene production at its Ribécourt plant last month.

Cheap U.S. chemicals and revaluation of Mark will affect Bayer's 1961 results

OVER the current year the 1960 turnover recorded by the biggest German chemical company, Farbenfabriken Bayer AG, Leverkusen, of DM2,818,500,000 (see CHEMICAL AGE, 15 April) will be passed and the 1961 figure will exceed DM3,000 million (£267 million), according to a letter issued to shareholders by Bayer. While sales value will be some 7% above the last year's level, sales volume will have risen by some 11%, due to the fall by an average of 3 to 4% of prices over the year.

Group turnover, i.e. that for Bayer plus all their 50% or more subsidiaries at home and abroad, is expected to total some DM3,600 million (£320 million) for 1961, as against a 1960 figure of some DM3,255 million. Total 1961 investments of Bayer and their 100% subsidiaries will have been of about DM480 million (DM403,800,000), while over 1962 between DM420 million and DM440 million will be spent. Main investment stress points in 1961 were the production of plastics materials, intermediates, dyestuffs and synthetic fibres, the Agfa camera works, operational and research laboratories and power plants.

Over the first 10 months of this year Bayer exports made up 45.4% of total sales, as compared with 44.8% in 1960. The share of the other five Common Market countries in total Bayer exports will be of some 26.7% for this year, compared with a 1960 share of 25.2%, while exports to E.F.T.A. drop from 22.4% to 21.3% of total exports.

An above-average turnover increase is awaited for 1961 in the case of plastics, synthetic fibres, photochemicals and phototechnical products, pharmaceutical specialities and veterinary products.

Revaluation of the Mark, the offer of very cheap U.S. chemicals this autumn and the East-West situation are given as negative features affecting the 1961 results.

Synthetic fibre expansion

A synthetic fibre plant producing Vinalon fibre with a planned capacity of 20,000 tonnes/year, is reported to be in construction in the North Korean chemical centre of Bonggong. A chemical fibre works at Chongyin, also in North Korea, is to have its wood-based output raised to a similar annual level. Also in Bonggong the completion is now announced of a chemical plant built with Soviet aid and with a yearly capacity of 900 tonnes of chemicals for the pharmaceutical and foodstuff industries.

Chemistry technique fair and congress in Basle

The Swiss Samples Fair is staging the Second International Exhibition and Congress of Laboratory, Measurement and Automation Techniques in Chemistry on its Basle exhibition site on 15-20 October 1962. Both exhibitors and the amount of exhibition space available are expected to be considerably greater in volume than at the first such event. On that occasion some 292 exhibitors from 11 different countries took part. The congress will consist of lectures for international audiences arranged by the Swiss Society of Chemists and the Swiss Association for Automation. Full details of the 1962 I.L.M.A.C. are available from Sekretariat, Schweizer Mustermesse, Basle 21, Switzerland.

Overseas news

NEW ALGERIAN NATURAL GAS COMPANY TO BUILD LIQUEFACTION PLANT

A COMPANY to process and sell Saharan natural gas was formed in Paris last week on an international basis, with M. Roger Truptil as chairman and under the title Compagnie Algérienne du Méthane Liquide (C.A.M.E.L.), the new company will build a plant at Port Arzew, near Oran, for the liquefaction of natural gas, which it will buy from the French producers. The first of its type in the world, it will be completed in 1963/64 to produce initially about 1,500 million cu. m. of natural gas a year. Of this total some 900 million to 1,000 million cu. m. are earmarked for the Gas Council under the agreement recently signed with British Methane Ltd. jointly owned by the Gas Council and Conch International Methane Ltd.). There is no indication of the selling price of the material.

The two methane tankers which are to transport the gas will be built in British shipyards for Conch Methane Tankers Ltd. and Methane Tanker Finance Co. (Houlder Bros.) Ltd.

C.A.M.E.L. are owned 50% by Conch International Methane, 26% by S.N.REPAL and C.F.P.(A) (the French Government controlled companies owning and producing the gas) and 24% by other French interests. Conch shareholders are Continental Oil of America 40%, Stockyards of Chicago 20% and Canadian Shell 40%.

Drug plant for Australia

The American Cyanamid Co. and Drug Houses of Australia Ltd. have agreed to form a company to manufacture and sell pharmaceuticals in Australia. The new company, to be known as Cyanamid D.H.A., will have assets of over £A250,000, with Cyanamid as the major stockholder. A plant to manufacture a broad range of antibiotics will be built next year on a 105-acre site at Laverton, 15 miles from Melbourne, and employ about 250 people.

Radioactive industrial diamonds

A method of making radioactive industrial diamonds has been patented in the U.S. by Dr. Robert H. Wentorf, of the General Electric Company. While the only production so far has been experimental, the process has important potential commercial use.

Natural industrial diamonds readily acquire and retain a charge of static electricity, which interferes with the sorting of the stones and collects dust and metal particles on diamond bearings and abrasive tools. Radioactive diamonds, however, according to the patent, do not retain static charges.

The diamonds are produced from graphite by applying extreme pressure and heat and using a metal catalyst, such as nickel. To make them radioactive, Dr. Wentorf adds a radioactive metal. The radioactivity is so low and of such short range that it is harmless.

Other recent advances in the production of synthetic diamonds were reported in CHEMICAL AGE, 14 January, p. 108. and 14 October. p. 590.

Brazil plans new fertiliser plant

New fertiliser facilities to be built in Brazil, near Salvador, are now in the planning stage. Production will total more than 100 tons a day of ammonia. This will be the country's second major fertiliser works. The Cubatão plant came on stream in 1958 and in 1960 output totalled 69,000 tons of nitro-calcium and 20,000 tons of ammonia.

The Petrobrás SBR works at Rio de Janeiro underwent successful tests at the end of November. Capacity is 40,000 tons/year.

Carbon black project for Israel

Israel Petrochemicals Enterprises Ltd., Haifa, are to build a carbon black plant in Israel at a cost of $U.S.3 million and to be completed by mid-1963. Licences, know-how and technical plans will come from the United Carbon Co., Houston, Texas, who have signed a contract with Israel Petrochemicals to this end. The Israeli firm is also planning future production of 15,000 tonnes of ethylene, 6,000 tonnes of polythene and 6,000 tonnes of alkaline detergents annually.

Parsons plan potash plant in Ethiopia

Ralph M. Parsons Co., Los Angeles, plan to produce some 300,000 tons of potash a year, all for export, at facilities to be built at Dallol in Ethiopia. Plans include a road, a deepwater port on the Red Sea, mining, processing and housing facilities, to a total cost of about $15 million. Partners with Parsons in the project are Seatankers Inc., owned by Daniel K. Ludwig, New York.

Brazil to import LPG from Argentina

The Brazilian National Petroleum Council has authorised the import of 100,000 tons of LPG from Argentina with a view to reducing the country's imports from the U.S.

Pechiney complain of dumping activities

'Marked dumping activities of foreign companies' are complained of by Pechiney in their annual statement to shareholders. The dumping, say Pechiney, has slowed down the deliveries of chemical products. In spite of this, however, the turnover in chemicals was approximately 17% up on 1960. Exports were responsible for 36% of sales compared with 30% for the previous year.

During the year issues to the value of NF32 million were made to finance plant expension.

From 1 January 1962, the chemical side of Pechiney's activities will be run entirely by Societe des Produits Chimiques Pechiney-Saint-Gobain.

Bayer plans in Latin America

Dynamic expansion plans in Latin America have been announced by Bayer: among statements made by the company in its latest bulletin are the following:

Almost all production plants of the Bayer do Brasil Industrias Quimicas S.A., of Brazil, are working to full capacity and must be extended to satisfy growing demand.

The recently opened plant in the Argentine of the Coliodal S.A. subsidiary for synthetic tanning media is working to full capacity and will probably have to be expanded, while it is planned to increase pharmaceutical and plant protection media production in the Argentine by building on a new site near Buenos Aires.

Plant protection media are in future to be produced at Bayer premises in the Chilean city of Santiago de Chile.

The production of pharmaceutical preparations is to be started in Peru.

It is currently being considered whether to expand capacity of Bayer's dyestuff, auxiliaries and plant protection media plant in Santa Clare, Mexico.

Syrian salt deposits found by Soviet team

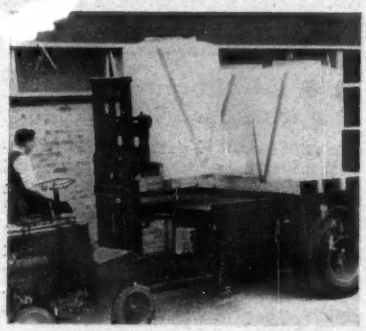
A committee has been established in Syria to study the prospects of exploiting rock salt deposits, containing 99.4% salt and 0.6% gypsum at Harmoushieh. north-west of Deir ez-Zor. The discovery was made by a team of Soviet technicians.

U.S. Customs reduce duty on boron 10

The U.S. Bureau of Customs have ruled that boron 10 is classifiable under tariff paragraph 302 (n) and dutiable at the lower rate of 12½% *ad valorem*. The new rate becomes effective 90 days after publication of the decision (on 9 November).

Equipment news and trends

OF interest to manufacturers and shippers handling difficult and aggressive materials is a new Valathene **bulk transit tank.** Consisting of a single, seamless moulded polythene container of 250 gall. capacity this tank is mounted on its own wooden lifting pallet and has



the extra safety of securing straps. Closure is achieved by a bolt-type closing ring holding the polythene coated metal lid securely in position and drainage is through a 1½ in. plastics outlet valve which fits safely and snugly under the wooden pallet.

Claimed as one of the easiest-to-handle bulk storage tanks introduced in recent years, this Valathene unit has a height of 54 in. (tank only) a diameter of 42½ in., a weight of only 75 lb. (tank only) and walls ¼ in. thick. The material used is a special high-grade polythene.

Metal Containers Ltd., Seymour House, 17 Waterloo Place, Pall Mall, London S.W.1.

* * *

The use of metal spraying pistols having a high throughput of metal creates problems in ensuring that the metal is applied with the utmost economy. For this reason a U.K. firm have produced an **auxiliary spreader nozzle** for attachment to their Mark 33 metal spraying pistol. This special attachment will spread the spray stream from a 3/16 in. dia. wire to an effective width of 3 in. at normal spraying distance.

In extended trials, it is claimed, the nozzle has proved of considerable advantage when coating large surface areas. The use of high throughput pistols for the spraying of small or complicated shapes is not recommended since the most economical and effective metal spraying depends largely upon selection of the most suitable size of wire.

Metallisation Ltd., Pear Tree Lane, Dudley, Worcs.

* * *

Described as a precision instrument for instantaneous **moisture measurement** in dry materials development, the new Shaw pressure meter operates at a higher frequency than other capacitance type moisture meters, and the design is claimed to eliminate the frequent adjustments usually needed with instruments for this kind of work. Normal operation consists of inserting the sample and pulling the lever, the instrument being made up of two main portions—an electronics cabinet surmounted by a pressure head.

Among advantages claimed for this instrument is that it can deal with wet chemicals owing to the totally screened sample chamber.

Shaw Moisture Meters, Rawson Road, Westgate, Bradford, Yorks.

* * *

Useful aids to chemistry lecturers, which are now available in a much improved yet cheaper version, accurately hollow moulded in rigid plastics instead of in wood as in the earlier version, are the Courtauld **atomic models.** A new linking mechanism, consisting of brass link, rubber collar and plastics ring, allows the distortion of the valency angles to be observed and measured. It also greatly extends the usefulness of the models in that it allows many molecules to be built which would otherwise be impossible to construct.

Griffin and George (Sales) Ltd., Ealing Road, Alperton, Wembley, Middlesex.

* * *

Suitable for the remote control of intermittent and varied production processes, and a number of other functions in laboratories and plant, are new **ultrasonic transducers** which need no electrical cable or electronic link. Advantages claimed for the ultrasonics system include its capacity for control without affecting similar systems nearby, non-interference with any electronic or electrical apparatus it is controlling, as well as simplicity and sensitivity.

Gulton Industries (Britain) Ltd., 10 St. George's Place, Brighton, Sussex.

* * *

With only one moving part, the Binary **elevator** provides a self-contained, portable means of extracting, elevating and discharging materials in a de-aerated state without the need for an air line or ancillary equipment. Applications include the discharge of bagged or drum-packed materials to storage hoppers, continuous feeding of mixers, recirculation of screen rejects in grinding or granulating plant. A specially designed centrifugal impeller fan rotates in the upper part of a divided chamber, and the central inlet projects through a baffle into the lower part. This inlet is covered by a perforated plate or mesh. The solids inlet tube projects through the bottom of the chamber to within a short distance of the mesh. The lower end of the inlet tube carries an entrainment nozzle designed to fluidise the granules whatever their level in their container. The lower chamber also carries the solids discharge spout.

The Watson-Marlow Air Pump Co., Marlow, Bucks.

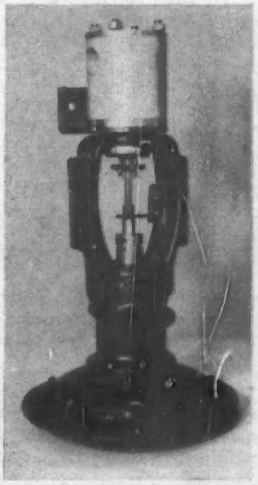
* * *

New developments have been announced in the IBM 1710 **process control system** which was introduced in the U.S. in March this year to give immediate warning and to indicate corrective action on any fall in efficiency of a manufacturing production line. Previously the 1710 read data from instruments on the production line, fed this to a computer and printed instructions telling an operator the action to be taken to restore the manufacturing process to full efficiency. Now the automatic adjustment of regulators controlling the process has also been taken over by the 1710.

The IBM 1710 consists of a small-scale, scientific computer, which can also be used independently; a data converter, which translates instrument signals into language understood by the computer; and the multiplexor and terminal unit.

I.B.M. United Kingdom Ltd., 101 Wigmore Street, London W.1.

PLASTICS CONTROL VALVES



One of a new range of plastics control valves produced by the Severn Instrument Co. Ltd., 3 Somerset Place, Tewkesbury, Glos. Body is available in p.v.c. as standard, p.t.f.e. and other plastics also being available where necessary. Plug and seat are machined from solid Penton, which is inert to most commercial chemicals. Body sizes available are ½, ¾ and 1 in.

PEOPLE in the news

● **Mr. L. Laufer** has resigned as managing director of Hoechst Chemicals Ltd., 50 Jermyn Street, London, S.W.1, on completion of his term of office. He is continuing in business as managing director of his own company, Laufer and Co. Ltd., 49 St. James's Street, London S.W.1 **Mr. H. U. Fintelmann** has been appointed managing director of Hoechst Chemicals as from 1 January.

● **Lord Fleck,** former chairman of I.C.I., is chairman of a new committee set up by the Minister for Science to consider and advise on the nature and extent of the Government's participation in research in radioastronomy.

● **Sir Julian Pode** (deputy chairman and managing director, Steel Company of Wales Ltd.) will succeed **Mr. C. R. Wheeler, C.B.E.,** as president of the British Iron and Steel Federation on 1 January. **Mr. Graham Stewart** (chairman and general managing director, Stewarts and Lloyds Ltd.) will become president-elect for 1962.

● Six members of the staff of Humphreys and Glasgow Ltd., international chemical contractors received gold wrist watches in recognition of 25 years service with the company from Mrs. Ambrose Congreve, wife of the chairman, at a ceremony in the Savoy Hotel, London, on 18 December. The recipients were: **S. R. Briggs,** plant maintenance supervisor; **W. G. Burt,** senior construction supervisor; **G. V. C. Davies,** assistant managing director; **S. A. Glazebrook,** chief draughtsman; **E. G. B. Godfrey,** design engineer; and **G. W. Kitchen,** supervisor. The chairman, who joined the company in September 1936, qualifies for an award, but was not present to receive it from his wife as he was abroad on a business tour.

J. S. Hunter who, as stated last week, will on 1 January become assistant to the chairman of the D.C.L. Chemical Group

● **Sir Robert Shore** has been appointed director-general of the proposed National Council for Economic Development.

● **Dr. F. G. Holliman,** Professor of Organic Chemistry, Cape Town University, has been appointed director of combined studies in the Faculty of Science, Leeds University, with effect from 1 July 1962.

● **Mr. G. Glew** has been appointed lecturer in the Procter Department of Food and Leather Science, Leeds University.

● **Mr. H. G. Trevor Busby,** a director of Lodge-Cottrell Ltd., electrical precipitation engineers of Birmingham, has been appointed managing director from 1 January. Lodge-Cottrell are one of the Simon Engineering Group.

● **Mr. Frank Newport, M.B.E.,** was guest of honour at a luncheon given recently by Sir Graham Hayman, chairman of the Distillers Company Ltd., and the directors at Distillers House, London, to mark his 50 years with the company. Mr. Newport joined D.C.L. in November 1911 as a laboratory assistant at the then Vauxhall Distillery in Liverpool.

F. Newport

He has served the company continuously since that date, except for a break of a year in the Royal Air Force. Since 1957 he has been director and general manager of Murgatroyd's Salt and Chemical Co. Ltd., Sandbach, Ches, who are jointly owned by D.C.L. and Fisons. Between 1943 and 1957 he was works manager and divisional director of the D.C.L. calcium carbide factory at Kenfig, and was awarded the M.B.E. for services at Kenfig when D.C.L. were managing agents for the Ministry of Supply. Mr. Newport has been president of the British Acetylene Association, and member of the Association of British Chemical Manufacturers' regional committees and British Standards Institution committees.

● **Dr. Norman Booth,** chief executive of the Scientific Division of the British Oxygen Co. Ltd., has joined the board of studies in technologies (other than engineering) of the National Council for Technological Awards.

A.P.T. merges with Institute of Printing

The Association of Printing Technologists has merged with the recently-formed Institute of Printing. The decision was made at a special meeting of A.P.T. members on 15 December when the results of a postal ballot were declared. The voting was 361 for, 10 against.

B.o.T. dinner for chemical industry

LEADERS of the British chemical industry were entertained to dinner last week by Sir Richard Powell, Permanent Secretary, Board of Trade, at the Dorchester Hotel.

The guests were: Mr. J. C. Hanbury (Allen and Hanburys Ltd.), M. J. C. Hutton-Wilson (Associated Chemical Companies Ltd.), Bernard Hickson (Hickson and Welch Ltd.), Lord Netherthorpe (Fisons Ltd.), Sir Graham Hayman (The Distillers Company Ltd.), Sir Sidney Barratt (Albright and Wilson Ltd.), Sir Miles Thomas (Monsanto Chemicals Ltd.), W. D. Scott (Imperial Chemical Industries Ltd.), G. H. W. Cullinan (Shell Chemical Co. Ltd.), George Brearley (director, Association of British Chemical Manufacturers), H. W. Vallender (deputy-director, A.B.C.M.), Sir Leslie Robinson (Second Secretary, Board of Trade), Gordon Bowen (Under Secretary, B.o.T.), C. W. Sanders (Assistant Secretary, B.o.T.), Miss K. M. Boyes (B.o.T.), and E. W. M. Magor (B.o.T.).

Q. & Q. will move to new works in 1962

GREATLY increased demand for their interchangeable laboratory glassware, will entail transfer of the entire production plant of Quickfit and Quartz Ltd. in 1962 to a new factory being built on a 93-acre site at Walton, Stone. It is hoped that production will start at the new factory by autumn 1962. Main office accommodation will probably be available early in 1963.

The new Quickfit factory will cost about £750,000 and will cover 150,000 square feet. It will be among the most modern in the Midlands and has been designed to harmonise with the rural surroundings on the site of the former Priory Farm.

Laboratory Equipment Exhibition moves

The Laboratory Apparatus and Materials Exhibition, which has been held for two successive years at the Royal Horticultural Society's New Hall, London W.1, is to be transferred to Earls Court in 1963; this will treble the available stand space. LABEX, as it will then be officially known, will thereafter be held in alternate years.

Twyford Labs. to be extended

The Twyford Laboratories, opened by Arthur Guinness Son and Co. Ltd. 18 months ago, are now to be extended to increase the present accommodation by nearly 50%.

Established for basic research in microbiology and biochemistry under Dr. Kay, these laboratories maintain close liaison with Guinness and with Crookes Laboratories, jointly owned by Guinness and Philips of Eindhoven, with a view to the commercial development and use of their new discoveries.

Commercial News

- **B.O.C. show increase in net profit**
- **Du Pont Canada expect 25% more earnings**
- **Increase in overseas activities for Naarden**
- **Pechiney 10-month turnover up 17%**

B.O.C.

Net profits of British Oxygen Co. for the year ended 30 September 1961, amounted to £4,717,000 compared with £4,427,000 for the previous year. Sales also showed an increase. A final dividend of 6¼% has been declared making 10¾% for the year on capital increased by a rights and scrip issue. This is equivalent to a total of 16%.

Bowmans Chemicals

After tax of £13,195 (£31,134), depreciation of £20,847 (£18,607), and deferred repairs provision nil (£10,000), net profit of Bowmans Chemicals Ltd., Widnes, for the year ended 31 October, totalled £25,718 (£27,361). A final dividend of 7¼% is declared as forecast, making 12¼% (equivalent 11.3%).

William Briggs

William Briggs and Sons Ltd. announce a group profit for the year ended 30 September of £471,885 (£353,648). After depreciation of £92,002 (£70,775) and tax of £205,646 (£128,668), net profit is £174,237 (£154,205). A final dividend of 9%. making 14% (same), is declared.

Murex

Group trading of Murex Ltd., Rainham, during the six months ended 31 October was slightly below the exceptional level of a year ago. Group sales were down 3% and group profits, after tax, were lower by 10%, reflecting reduced operating margins and the higher profit tax rate. Profits were, however, in line with those for the six months ended 30 April. Interim dividend is 5% (same).

Capital spending during the year, mainly at Rainham Works, totalled £180,000 (£237,000). Outstanding capital authorised at 31 October amounted to £390,000.

Turner and Newall

Group trading profit of Turner and Newall for the year ended 30 September 1961, was £14,778,690 (£13,636,555). This includes £1,074,343 in respect of British Industrial Plastics and Stillite Products which were acquired during the year. The final dividend is 8% making 12% on the Ordinary capital as increased by the issue of shares against the acquisition of the balance of the Ordinary shares of British Industrial Plastics.

American Cyanamid

American Cyanamid Co. are expecting record financial results in 1961, with turnover probably passing the $600 million mark and profit of between $2.20 and $2.30/share. Last year share profit was $2.20.

Allied Chemicals

Directors of Allied Chemical Corporation and the Union Texas Natural Gas Corporation have now approved the terms of Allied Chemical's proposed take over. Allied Chemical are to exchange seven-eighths of a share of their common stock outstanding. At current market prices this would mean an exchange of more than $350 million since there are 7,256,000 outstanding shares of Union Texas.

American Viscose

A "remarkable improvement" in the current quarter has caused American Viscose Corporation to raise their estimated 1961 earnings from $1.75 to $1.80 a share to $2/share. Earnings in 1960 were worth $1.45/share. The company hopes to diversify its operations, possibly through an acquisition during 1962.

Du Pont of Canada

Directors of Du Pont of Canada Ltd., Montreal, have declared a dividend in respect of 1961 of 30 cents on the common stock, compared with a 1960 final of 20 cents. The latest disbursement brings total payments in respect of 1961 to 60 cents/share compared with last year's 50 cents.

Earnings for the current year are expected to be about 25% higher than last year and sales about 10%. The increased earnings, together with a higher cash flow from operations have permitted repayment of the short-term borrowings required in recent years.

Du Pont of Canada last year had a net income of $6,835,006, or 92 cents/share of common stock, on net sales of $99,812,672. The indicated increases for 1961 would bring net income to about $8,600,000 and sales to approximately $109,700,000.

La Seda de Barcelona

The Spanish chemical concern, La Seda de Barcelona S.A., Barcelona, are to grant a dividend in the form of one B share of nominally 500 pesos per 40 A shares held and a similar grant of one B share for every B share already held.

'Naarden'

An interim announcement from N.V. Chemische Fabriek 'Naarden', Naarden-Holland, indicates considerable overseas activity in 1961 and further expansion of the company's overseas organisation with the take-over of an unnamed European company. In Spain and Malaya, new plants have come on stream. 'Naarden' also announced a project for the distillation of tall oil.

Sales by overseas subsidiaries increased, as did those by the parent company, but to a smaller extent. Jan Dekker N.V., Wormerveer, maintained their 1960 sales level.

Revaluation of the guilder adversely affected results. Expansion in research entailed cost increases, but against that should be set higher profits by subsidiaries. As a result 1961 trading results of the parent company will be about equal to 1960. It is not expected that long-term capital will be needed in 1962.

National Chemicals

An increase in sales from R3,485,000 (£1,742,500) to R3,940,000 for the half-year ended 25 September 1961 has not prevented National Chemicals Ltd. from suffering a profit decline from R441,000 to R414,000 for that period. The chairman speaks of an increase of R90,000 in depreciation and interest charges for the period, while the trading benefits which will be forthcoming in due course from the extended production facilities have not yet been felt. Sales continued to improve but exports might be affected to some extent by the ending of Commonwealth preference, previously of great help to the company.

Pechiney

The French chemical concern Péchiney have announced that despite the stiffening of competition on the French home market, where foreign firms were attempting to sell their products at dumping prices in the chemical sphere, their turnover over the first ten months of this year was 17% higher than that for the corresponding 1960 period, the share of exports in total sales rising from 30 to 36% over the period.

Rhone-Poulenc

The proposed merger between Rhône-Poulenc and Celtex in France would give the combined companies a stock market value of around £500 million. Both companies are equal partners in Rhodiaceta, man-made fibre producers. A holding company, Celtex also have interests in pulp and paper.

Sutcliffe Speakman

Interim dividend of Sutcliffe Speakman, chemical engineers, has been raised to 7½% (5%), to reduce the disparity between interim and final payments. There is no implication that total dividend will be raised.

INCREASES OF CAPITAL

RHODIACETA S.A., the French synthetic-fibre producers, are raising their capital from 206.4 million to 258 million francs, a sum of 51.6 million francs to be withdrawn from reserves and issued as free shares at a ratio of 1:4.

UNITED CHEMICALS (LONDON) LTD., 9 Arundel Street, London W.C.2. Increased by £14,500 beyond the registered capital of £500.

NEW PATENTS

By permission of the Controller, H.M. Stationery Office, the following extracts are reproduced from the 'Official Journal (Patents)', which is available from the Patent Office (Sales Branch), 25 Southampton Buildings, Chancery Lane, London W.C.2, price 3s 6d including postage; annual subscription £8 2s.

Specifications filed in connection with the acceptances in the following list will be open to public inspection on the dates shown. Opposition to the grant of a patent on any of the applications listed may be lodged by filing patents form 12 at any time within the prescribed period.

ACCEPTANCES

Open to public inspection 31 January

Polymeric and vulcanisable materials. Rubber & Plastics Research Association of Great Britain. **888 231**

Production of bonded fibrous materials. Freudenberg Komm.-Ges. Auf Aktien., Carl. **888 466**

Heterocyclic sulphoxides. Boots Pure Drug Co. Ltd. **888 684**

Catalysed gas-liquid chemical processes. Distillers Co. Ltd. **888 252**

Polypropylene monofilaments and a method of preparing them. Montecatini. [Addition to 810 023.] **888 300**

Substituted 20 α-yohimbane. Laboratoires Francais de Chimiotherapie. **888 407**

Indoles and their preparation. Laboratoires Francais de Chimiotherapie. **888 408**

Reserpine and its derivatives. Laboratoires Francais de Chimiotherapie. **888 409**

5-chloro-6-methoxytryptamine and its preparation. Laboratoires Francais de Chimiotherapie. **888 410**

Esterification of yohimbane derivatives. Laboratoires Francaise de Chimiotherapie. **888 411**

Reserpine compounds. Laboratoires Francais de Chimiotherapie. **888 412**

Substituted tryptamines. Laboratoires Francais de Chimiotherapie. **888 413**

Preparation of 3β-20α-yohimbane derivatives. Laboratoires Francais de Chimiotherapie. **888 414**

Phosphorus-containing amino-triazole derivatives. Philips Gloeilampenfabriek N.V. **888 686**

Air-drying aminoplast-alkyd coating compositions. Rheinpreussen Aktiengesellschaft Fuer Bergbau und Chemie. **888 473**

Thermoplastic-polyesterurethanes. Goodrich Co., B. F. **888 268**

Fluorocarbon acrylamides. Minnesota Mining & Manufacturing Co. **888 311**

Production of an intermediate for the synthesis of reserpine. Laboratoires Francais de Chimiotherapie. **888 415, 888 416**

Adhesive compositions and laminates made therewith. Rohm & Haas Co. **888 487**

Process for preparing 3:5-diketo-pyrazolidine derivatives. Sandoz Ltd. **888 578**

Piperidine carbinols. MacFarlan & Co. Ltd., J. F. **888 657**

Bis-tetrahydrofuranyl ethers. Merck & Co., Inc. **888 568**

Reserpine and its derivatives. Laboratoires Francais de Chimiotherapie. **888 418**

Method of making synthetic resin. Union Carbide Corporation. **888 270**

Azo-dyestuffs and process for their manufacture. Ciba Ltd. **888 582**

Amino-pyrimidines and a process for their manufacture. Ciba Ltd. [Addition to 877 131.] **888 690**

Process for the production of stable aqueous emulsions of polyvinylacetals. Wacker-Chemie GmbH. **888 272**

Tryptamines. Laboratoires Francais de Chimiotherapie. **888 419**

Polyurethane products. Farbenfabriken Bayer AG. **888 691**

Purification of adiponitrile. Chemstrand Corporation. **888 659**

Powdered resinous coating compositions. Polymer Corporation. **888 207**

Adhesives containing phenol-formaldehyde resins and curable elastomeric polymers. Herr, B. F., and Bemmels, C. W. **888 208**

2:5-di-[-benzimidazyl-(2')]-furanes. Ciba Ltd. **888 209**

Indole compounds. Lepetit S.p.A. **888 535**

Acid esters of amino polyethylene glycols. Ciba Ltd. **888 661**

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Block polymers and process for preparation thereof. Phillips Petroleum Co. **888 624**

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Production of monohalogen substituted phosphines. Imperial Chemical Industries Ltd. **888 398**

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Organic aluminium compounds. Hardman & Holden Ltd. **888 666**

Process for the production of a substituted deserpidine. Laboratoires Francais de Chimiotherapie. **888 423**

Imidazolines and a process for their manufacture. Ciba Ltd. **888 703**

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Fertilisers. Imperial Chemical Industries Ltd. **888 668**

Sulphides and sulphoxides and method of preparation. Phillips Petroleum Co. **888 669**

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Halogenated hydrouracils. Diamond Alkali Co. **888 627**

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Process for converting halogenous organic aluminium compounds into halogenous diakyl-aluminium compounds with other hydrocarbon radicals. Ziegler, K. [Addition to 879 269.] **888 352**

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Haloacetone bisulphite addition compounds. Norwich Pharmacal Co. **888 288**

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Haloformamidines. Farbenfabriken Bayer AG. **888 646**

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Cocrystalised vanadium-titanium catalyst components. Esso Research & Engineering Co. **888 799**

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Production of epsilon-caprolactam. Union Carbide Corp. **888 498**

Vinyl phosphate insecticides, processes for their production and compositions containing them. Allied Chemical Corp. **888 648**

Benzene-monoazo pyrazole dyestuffs. Farbenfabriken Bayer AG. **888 499**

Process for the reduction of aromatic compounds. Ciba Ltd. **888 650**

Stabilisation of polyolefins. Sun Oil Co. **888 673**

6 Chloro-gramine and its preparation. Laboratoires Francaise de Chimiotherapie. [Divided out of 888 408.] **888 424**

6-Chloro-3-indolyl-acetonitrile and its preparation. Laboratoires Francais de Chimiotherapie. [Divided out of 888 408.] **888 425**

Resolution of lysine. A.E.C. Soc. de Chimie Organique et Biologique. **888 674**

Animal foodstuffs and compositions containing nitromidazoles. Rhone-Poulenc. **888 675**

Tryptamine-2-carbocyclic acid derivatives, and their preparation. Laboratories Francais de Chimiotherapie. [Divided out of 888 413.] **888 426**

Reserpine and its derivatives. Laboratories Francais de Chimiotherapie. [Divided out of 888 409.] **888 427**

Production of bicyclo-[2,2,1]-heptadine-(2,5). Badische Anilin- & Soda-Fabrik AG. **888 501**

Interpolymers. Goodrich Co., B. F. **888 503**

Production of naphthalene. Ashland Oil & Refining Co. **888 652**

Anti-knock agent for motor fuels. Esso Research & Engineering Co. **888 456**

Antibacterial agents. Beecham Research Laboratories Ltd. **888 552**

Process for the production of a salt of the laeculinic acid derivative of cyanacetic acid hydrazide. Farbenfabriken Bayer AG. **888 679**

Reserpine and its derivatives. Laboratoires Francais de Chimiotherapie. [Divided out of 888 412.] **888 428**

Benzoates. Upjohn Co. **888 681**

Polymerisation of ethylenically unsaturated compounds in finely-divided form. Shell Internationale Research Maatschappij N.V. **888 384**

Process for the manufacture of formaldehyde polymers. Houilleres du Bassin du Nord et due Pas-de-Calais. **888 559**

Pharmaceutical preparations containing 2-phenyl-oxyethylhydrazine. Ciba Ltd. [Divided out of 888 525.] **888 526**

20α-Yohimbane derivatives. Laboratoires Francais de Chimiotherapie. [Divided out of 888 407.] **888 429, 888 430**

Production of 3-oxo-2,3-seco-20α-yohimbanes Laboratoires Francais de Chimiotherapie. [Divided out of 888 407.] **888 431**

Method of bonding polyurethane. Reeves Bros. Inc. [Divided out of 888 367.] **888 368**

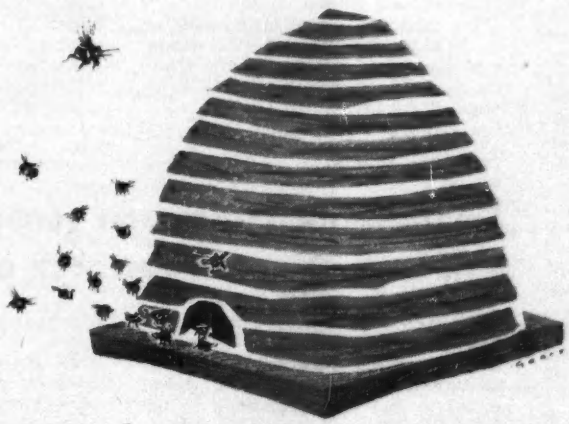
Density-composition tables for aqueous solutions of NaOH

In a new edition of B.S.824 covering density-composition tables for aqueous solutions of sodium hydroxide, tables based on data obtained from the International Critical Tables remain unchanged, but the accompanying text has been revised to agree with the latest edition of B.S.718, 'Density hydrometers and specific gravity hydrometers'. The hydrometers and tables together provide a simple means of determining the strength of any aqueous solution of sodium hydroxide or of preparing solutions of known strength.

The tables give mass in grammes of sodium hydroxide in 100 g. of aqueous solution, and mass in grammes of sodium hydroxide in 1 litre of aqueous solution for values of density in g./ml. The values are given comprehensively for each 5°C over the range of 10°C to 40°C.

Also included in the standard is a list of standard hydrometers suitable for use in conjunction with the table. Examples of use and notes on corrections of readings taken on B.S. hydrometers are given.

Copies of this standard are available from the British Standards Institution, Sales Branch, 2 Park Street, London W.1, price 12s 6d each (postage extra to non-subscribers).



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TRADE NOTES

P.t.f.e. tape

P.t.f.e. pressure sensitive tape, which will be marketed under the trade name Temp-R-Tape, has been introduced by Polypenco Ltd., Gate House, Welwyn Garden City, Herts. Made from first quality p.t.f.e. electrical grade tape with a pressure sensitive adhesive backing, it is available in two alternative standard thicknesses, 0.006 and 0.013 in. and is available in widths up to 2 in. from stock and up to 12 in. wide to order. Applications include hopper and chute linings, maskings in the chemical and metal finishing industries, and many others.

Pyrex properties

Chemical, thermal and mechanical properties of Pyrex borosilicate glass are discussed at some length in the December number of 'Pyrex Glass', issued by James A. Jobling and Co. Ltd., Wear Glass Works, Sunderland. Chemical durability data are included, with details of tests with water, water vapour, acids and alkalis.

Discontinued products

From 1 January, Badional Gel and Resotren are being discontinued by, and deleted from the price list of, F.B.A. Pharmaceuticals Ltd., 37-41 Bedford Row, London W.C.1. However, the company will continue to meet demand for these products until the remaining stock is exhausted.

Film on fire control

Available on free loan from Colt Ventilation Ltd., Surbiton, Surrey, is the newly revised edition of the film 'Fire control in industry' with a record of the three-year Colt sponsored research programme on fire venting conducted by the D.S.I.R. Fire Research Station. A synopsis of this film is available from Colt Ventilation.

Changes of address

Production Chemicals (Rochdale) Ltd., hitherto of Victoria Buildings, 32 Deansgate, Manchester, have changed their address to Speakers House, 39 Deansgate, Manchester 3 (telephone: Blackfriars 3396 and 6302).

Owing to continued expansion and increase of sales, the southern area office of Fielden Electronics Ltd. has moved to larger premises at 181-183 Earls Court Road, London S.W.5 (telephone: Freemantle 7866).

Chlorinated rubber paint

A new chlorinated rubber industrial paint, Thixochlor, that is claimed to require only two coats to achieve the effect of five coats or more with conventional materials has been developed by Detel Products Ltd., Stonefield Way, Victoria Road, Ruislip, Middx.

The main use of this product will be in chemical, fertiliser and other heavy industries where a thick chemical-resisting coating is required in colour with no restricted pot life.

Design and construction of laboratories

THE design and construction of various types of laboratory was the subject of paper presented recently to the North of England Section of the Society for Analytical Chemistry by R. R. Young and P. J. Harrington.

The first stage in the design of a laboratory is the preliminary discussions with the scientist in charge mainly concerned with the site, accommodation required and facilities such as storage and car parking. Small-scale plans are then prepared and revised until agreement is reached. Large-scale plans are drawn up, concurrently with preparation by the scientist in charge of the sketch plan for each room. This information is then transferred to the large-scale plan. Advice is required on the following: acids and solvents to be used in the laboratory; building materials to withstand acids and solvents; fire, flooding and radiation hazards; special equipment. Still greater detail is required for fume cupboards, benches, etc.

Small, compact neutron generator will have chemical research applications

A FAST-NEUTRON generator, claimed by the manufacturers to be the first really safe, compact and inexpensive unit to become generally available, is expected to find wide application in the chemical and other industries as well as in medical work. Developed by the Services Electronics Research Laboratories at Baldock, Herts, it is to be manufactured under licence and marketed commercially by the Elliott Automation Group.

Hitherto neutron sources have tended to be large, expensive installations requiring massive shielding against radiation and extensive safety precautions in the handling of the equipment. Heart of the new Elliott neutron generator is a K-type neutron source tube only 8 in. long and 1¼ in. in diameter. It is housed, with its associated 150,000 V. pulse transformer, in a shielded case, less than ½ cu. ft. in volume. Including all the electronic power supplies and controls, the entire equipment occupies a space of less than 4 cu. ft. But, in spite of its small size, the generator produces a stream of neutrons with an energy of 14.3 MeV in pulses of 20 microseconds' duration. It works from the standard public electricity supply and is completely inert and, therefore, safe when switched off.

Its great advantage, apart from its low cost, is that, being portable, it can be used to produce radio-active isotopes in the places where they are used. This makes possible the use of isotopes with very short half-lives, a development of immediate practical significance.

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AS AN ADVERTISER YOU ARE READING THIS TO SEE WHAT OTHERS ARE ADVERTISING. As a proprietor of this journal, I hope you are a satisfied advertiser. If so, please give a thought to those advertising men and women less lucky than yourself, and send me, as President of the National Advertising Benevolent Society, a contribution for my 1961/62 Appeal. Any amount, however small, will be most welcome. Please state whether you would like the money to go to the General Benevolent Fund, now caring for 233 adults, the Education Fund, paying for 65 children, or the new Elderly People's Homes project, or whether you prefer to leave it to my discretion.—Glanvill Benn, 154 Fleet Street, London, E.C.4.

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The Instrument Engineer will be responsible to the Works Engineer for the maintenance and satisfactory operation of all instruments on the works, including process-control and recording equipment.

The post is pensionable and the successful applicant will be required to pass a medical examination.

Applications, stating age, and giving details of education, training, qualifications and experience, together with the names of two referees, should be sent to the undersigned within ten days of the appearance of this advertisement.

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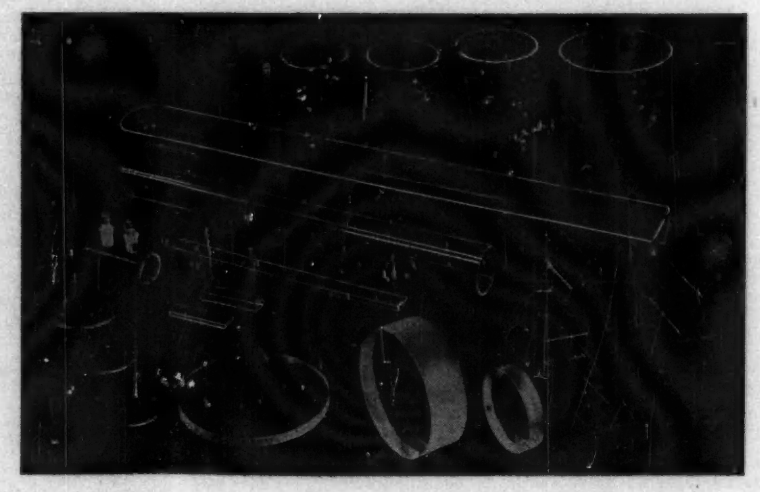

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1962

Chemical Age

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and WHO'S WHO

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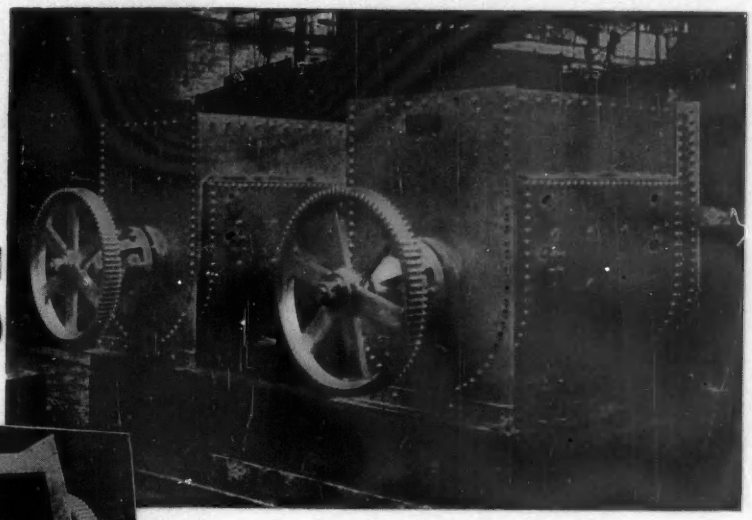

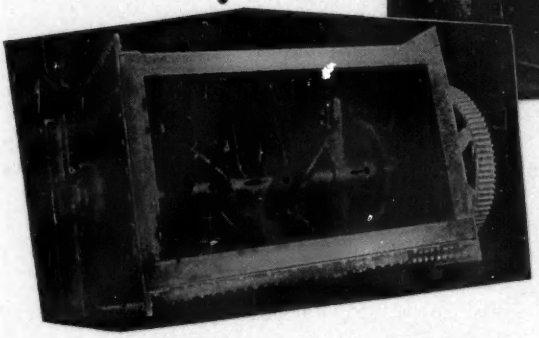

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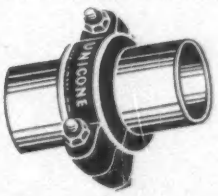

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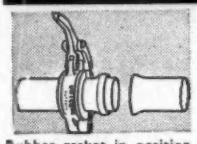
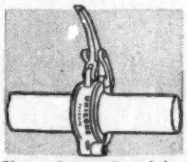
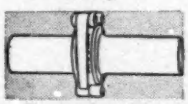


Rubber gasket in position and joint ready to pull over.



Pipe ends joined ready for locking.



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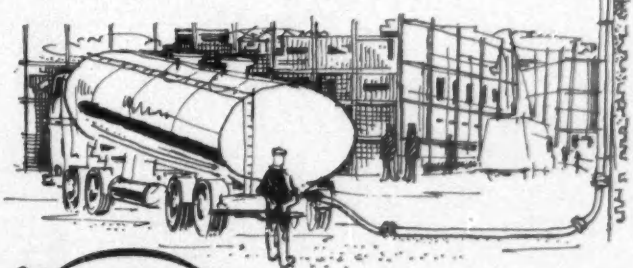

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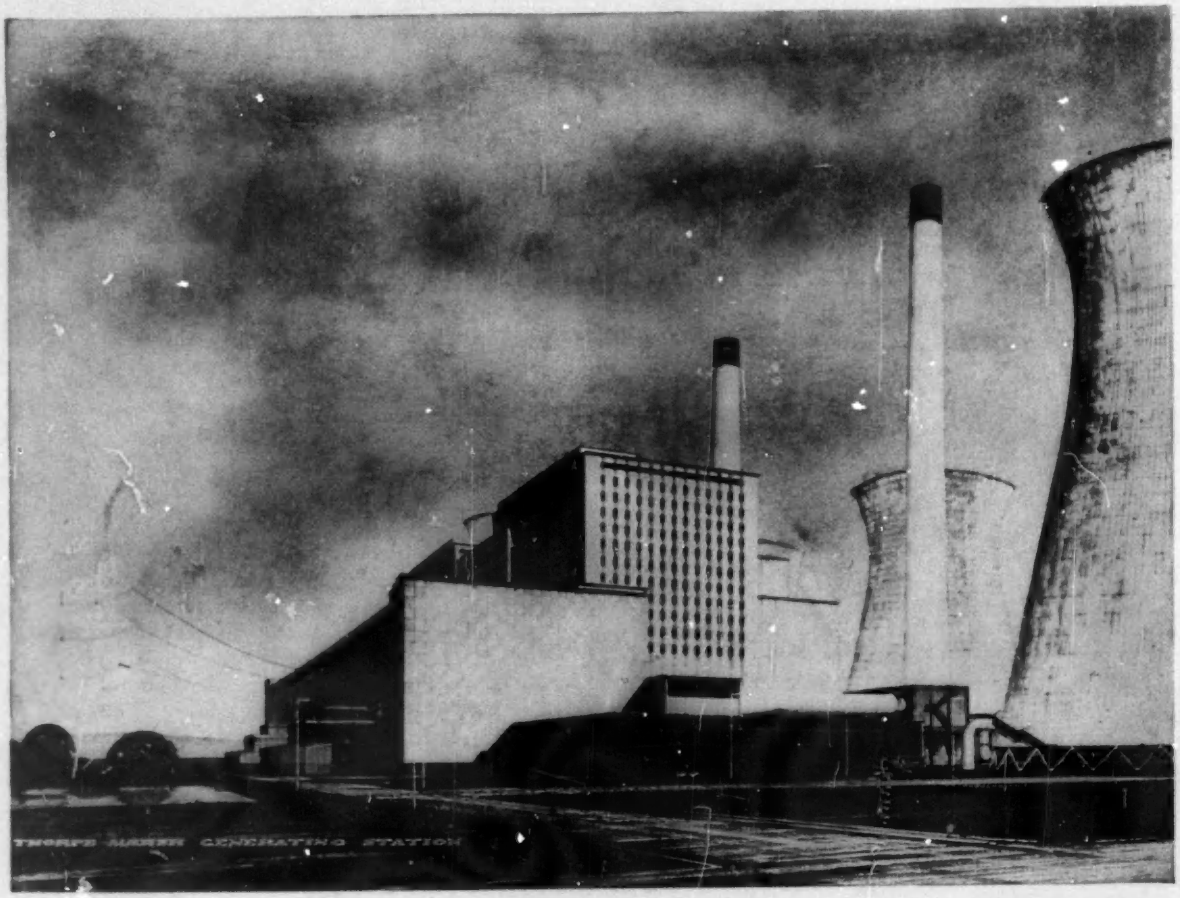

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